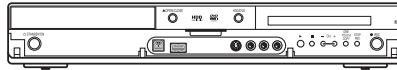


Service Manual



DVR-640H-S

ORDER NO.
RRV3376

DVD RECORDER

DVR-640H-S

DVR-543H-S

DVR-540H-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please confirm 3rd & 4th alphabetical letters.
DVR-640H-S	KUCXV	AC120 V	1	&&DL#####
DVR-543H-S	KUCXV	AC120 V	1	&&DL#####
DVR-540H-S	KUCXV	AC120 V	1	&&DL#####

- When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.

An HDD (Hard Disc Drive) is mounted in this product.

The HDD is a precision instrument very vulnerable to shock and electrostatic charges. Please read "7.3 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.

When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible.

Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.

The user must be made aware that all recorded data are deleted if the HDD is initialized.



For details, refer to "Important Check Points for Good Servicing" .

1234

SAFETY INFORMATION

A



This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

B

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

C

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

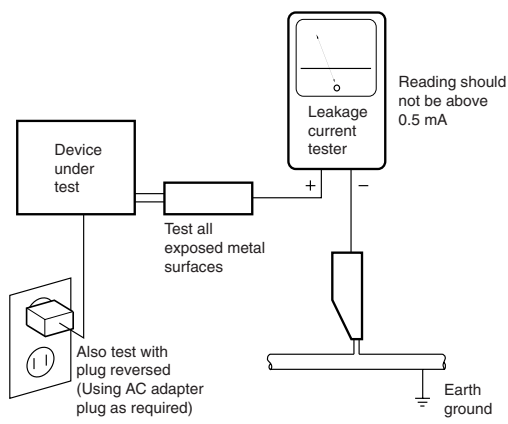
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

■ LABEL CHECK

— IMPORTANT —

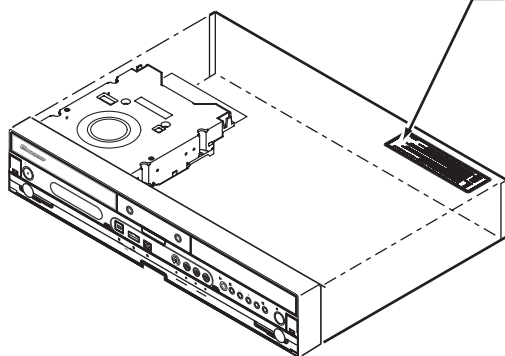
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

— LASER DIODE CHARACTERISTICS —

MAXIMUM OUTPUT POWER: 100 mW
WAVELENGTH: 654nm to 662 nm

— LASER DIODE CHARACTERISTICS —

MAXIMUM OUTPUT POWER: 5 mW
WAVELENGTH: 770nm to 810 nm



CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FASCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASSE 3B SYNLIG OCH USYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEFÄHRDETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTENINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN.
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LASER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LASER.
VARO! AVAKTAESSA OLET AITTUNA NÄKYVÄLLÄ JA NÄKYMÄTTÖMÄLLÄ LUOKAN 3B LASERISÄTELYLLÄ. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可視和不可見雷射輻射。請勿受雷射束輻射。
注意 ここを開くと CLASS 3B の可視レーザー光及び不可視レーザー光が出ます。ビームを直接見たり、触れたりしないこと。

VRW2262 - A

VRW2262

— Additional Laser Caution —

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
However, the interlock does not always operate in the test mode.
2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SPECIFICATIONS

● Specifications

General

Power requirements 120 V, 60 Hz
Power consumption 37 W
Power consumption in standby mode 0.29 W
(Front panel display : off)

Weight

DVR-640H-S/DVR-543H-S 4.3 kg (9 lb. 8 oz.)
DVR-540H-S 4.2 kg (9 lb. 5 oz.)

Dimensions 420 mm (W) x 69 mm (H) x 318 mm (D)
(16 ⁹/₁₆ in. (W) x 2 ³/₄ in. (H) 12 ⁹/₁₆ in. (D))

Operating temperature +5 °C to +35 °C
(+41 °F to +95 °F)

Operating humidity 5 % to 85 %
(no condensation)

TV system NTSC

Readable discs

DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM,
Video CD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA)

Recording discs and formats

DVD-R/-RW : VR mode and Video mode

DVD+R/+RW : +VR mode

DVD-RAM : VR mode

DVD-R DL : VR mode and Video mode

DVD+R DL : +VR mode

Video recording format

Sampling frequency 13.5 MHz

Compression format MPEG

Audio recording format

Sampling frequency 48 kHz

Compression format Dolby Digital or Linear PCM
(uncompressed)

Recording time

HDD

DVR-640H-S (160 GB)

Fine (XP) Approx. 34 h
Standard Play (SP) Approx. 68 h
Long Play (LP) Approx. 136 h
Extended Play (EP) Approx. 204 h
Super Long Play (SLP) Approx. 272 h
Super Extended Play (SEP) Approx. 340 h
Manual Mode (MN) Approx. 34 h to 455 h

DVR-543/540H-S (80 GB)

Fine (XP) Approx. 17 h
Standard Play (SP) Approx. 34 h
Long Play (LP) Approx. 68 h
Extended Play (EP) Approx. 102 h
Super Long Play (SLP) Approx. 136 h
Super Extended Play (SEP) Approx. 170 h
Manual Mode (MN) Approx. 17 h to 227 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM

Fine (XP) Approx. 1 h
Standard Play (SP) Approx. 2 h
Long Play (LP) Approx. 4 h
Extended Play (EP) Approx. 6 h
Super Long Play (SLP) Approx. 8 h
Super Extended Play (SEP) Approx. 10 h
(DVD-R/-RW, DVD-RAM only)

Manual Mode (MN)

DVD-R/-RW/-RAM Approx. 1 h to 13 h
DVD+R/+RW Approx. 1 h to 8 h

DVD-R DL/DVD+R DL

Fine (XP) Approx. 1 h 51 m
Standard Play (SP) Approx. 3 h 35 m
Long Play (LP) Approx. 7 h 11 m
Extended Play (EP) Approx. 10 h 46 m
Super Long Play (SLP) Approx. 14 h 21 m
Super Extended Play (SEP) Approx. 17 h 57 m
(DVD-R DL only)

Manual Mode (MN)

DVD-R DL Approx. 1 h 51 m to 24 h
DVD+R DL Approx. 1 h 51 m to 14 h 21 m

Tuner

Receiveable channels

VHF 2 ch to 13 ch

UHF 14 ch to 69 ch

CATV C1 ch to C125 ch

Timer

Programs 1 month/32 programs

Clock Quartz lock (12-hour digital display)

Input/Output

VHF/UHF antenna input/output terminal VHF/UHF set

75Ω (F-shape connector)

Video input Input 1,3 (rear), 2 (front)

Input level 1 Vp-p (75 Ω)

Jacks RCA jack

Video output Output 1,2

Output level 1 Vp-p (75 Ω)

Jacks RCA jack

S-Video input Input 1, 3 (rear), 2 (front)

Y (luminance) - Input level 1 Vp-p (75 Ω)

C (color) - Input level 286 mVp-p (75 Ω)

Jacks 4 pin mini DIN

S-Video output Output 1,2

Y (luminance) - Output level 1 Vp-p (75 Ω)

C (color) - Output level 286 mVp-p (75 Ω)

Jacks 4 pin mini DIN

Component video output

Output level Y: 1.0 Vp-p (75 Ω)

PB, PR : 0.7 Vp-p (75 Ω)

Jacks RCA jacks

Audio input Input 1, 3 (rear), 2 (front) L/R

Input level

During audio input 2V rms

(Input impedance : more than 22 kΩ)

Jacks RCA jacks

Audio output Output 1,2 L/R

During audio output 2V rms

(Output impedance : less than 1.5 kΩ)

Jacks RCA jacks

Control input Mini jack

Digital audio output Coaxial

USB Type A (front), Type B (front)

(DVR-640H-S/DVR-543H-S only)

Supplied accessories

Remote control 1

Dry cell batteries (AA/R6P) 2

Audio / Video cable (red/white/yellow) 1

RF antenna cable 1

Power cable 1

Quick start guide

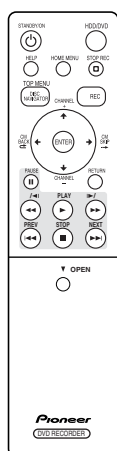
Operating Instructions

Warranty card 1

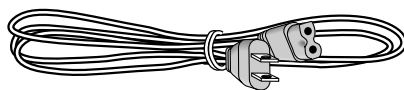
Note : The specifications and design of this product are subject to change without notice, due to improvement.

● Accessories

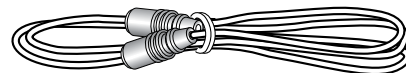
- Remote control ×1
(VXX3095)



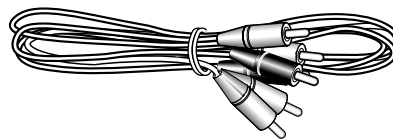
- Power cable ×1
(ADG7021)



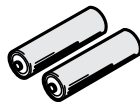
- RF antenna cable(NTSC) ×1
(VDE1088)



- Audio / Video cable(1.5m) ×1
(red/white/yellow)
(VDE1077)



- Dry cell batteries ×2
(AA/R6P)



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(1) PACKING SECTION PARTS LIST

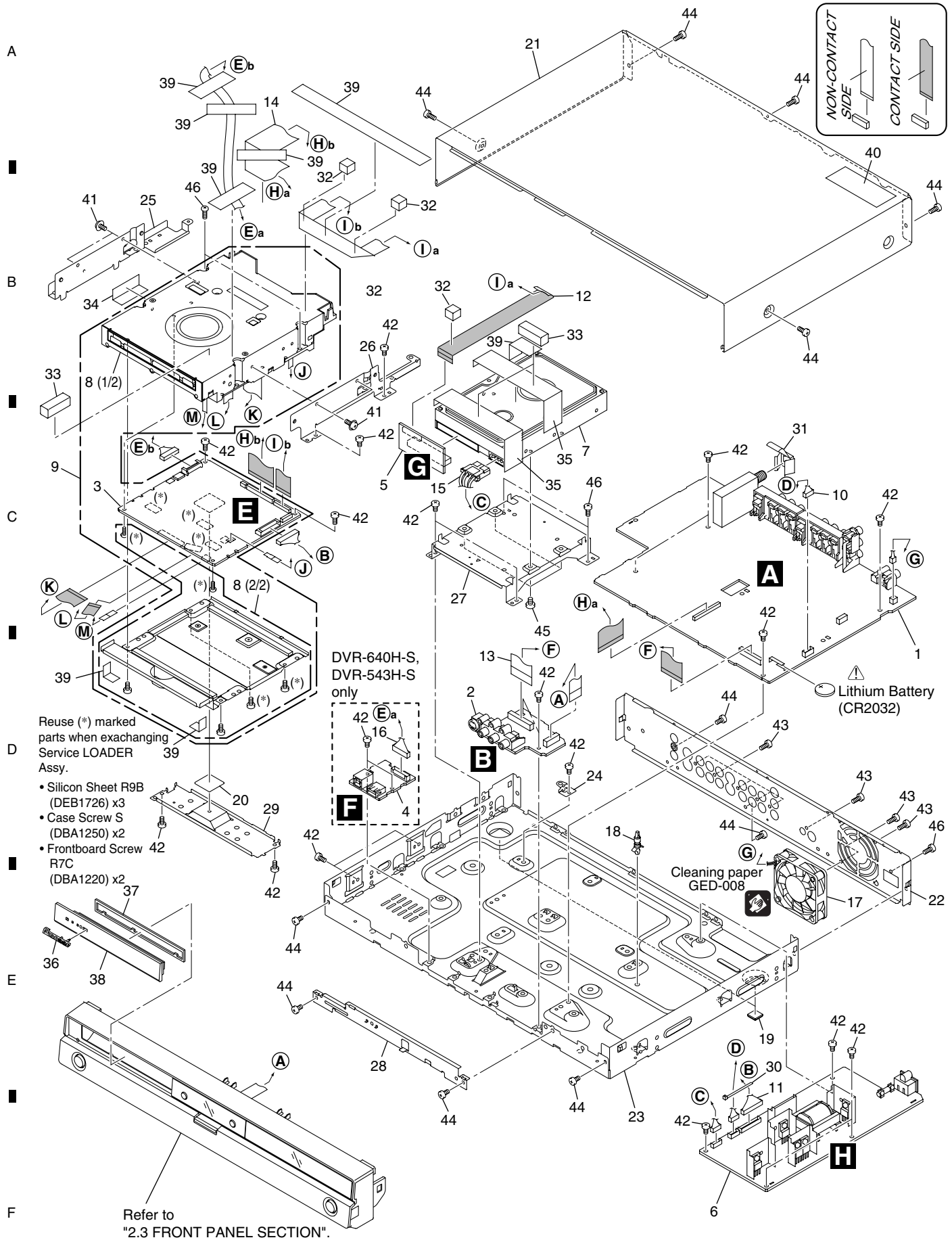
Mark	No.	Description	Part No.
⚠	1	Power Cord	ADG7021
	2	Audio/Video Cable (1.5m)	VDE1077
	3	RF Antenna Cable	VDE1088
	4	Remote Control Unit	VXX3095
	5	Battery Cover	VZN1004
	6	Top Cover	VZN1012
NSP	7	Dry Cell Battery (R6P, AA)	VEM1010
NSP	8	Warranty Card	ARY7045
	9	Operating Instructions (English)	VRB1412
	10	Operating Instructions (French)	VRC1318
	11	Quick Start Guide	VRG1014
	12	Quick Start Guide	VRL1012
	13	HDD Caution 8L B	VRR1062
	14	HDD Caution 8L	VRR1063
	15	Polyethylene Bag B5	VHL1088
	16	Front Pad	VHA1415
	17	Rear Pad	VHA1416
	18	Packing Case	See Contrast table (2)
	19	Mirror Sheet	VHL1095
	20	Mirror Sheet	VHL1104
NSP	21	Caution	See Contrast table (2)

(2) CONTRAST TABLE

DVR-640H-S/KUCXV, DVR-543H-S/KUCXV and DVR-540H-S/KUCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-640H-S/KUCXV	DVR-543H-S/KUCXV	DVR-540H-S/KUCXV
	18	Packing Case	VHG2728	VHG2727	VHG2726
NSP	21	Caution	VRN1014	VRN1014	Not used

2.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	TUJB Assy (for service)	VXX3146	NSP 26	Writer Stay R	VNE2422
2	FJKB Assy (for service)	VXX3113	NSP 27	HDD Stay	VNE2423
3	MAIN Assy (for service)	See Contrast table (2)	NSP 28	Bridge	VNE2429
4	USBB Assy	See Contrast table (2)	29	Heatsink	VNH1077
5	ATAB Assy (for service)	VXX3140	NSP 30	Binder (BK-1)	ZCA-BK1
⚠ 6	POWER SUPPLY Unit	VWR1401	31	Earth Plate TU	VBK1162
7	HDD	See Contrast table (2)	32	Rubber Spacer C	VEB1389
8	LOADER Assy (for service)	VXX3156	33	Gasket 30 x 10T	VEC2522
NSP 9	Service LOADER MAIN	See Contrast table (2)	34	Aluminum Tape 25 x 25	VEF1060
10	Connector Assy	PF05PP-S07	35	Aluminum Tape 180 x 25	VEF1065
11	Connector Assy	PF13PP-S22	36	Pioneer Name Plate	VAM1148
12	Flexible Cable 40P	VDA2112	37	Tray Sheet	VEC2500
13	Flexible Cable 23P	VDA2113	38	Tray Panel	VNK5910
14	Flexible Cable 35P	VDA2114	NSP 39	Tape	ZTA-156A-19
15	Housing Assy 4P	VKP2357	40	Laser Caution Label	VRW2262
16	Housing USB (MAIN)	See Contrast table (2)	41	Screw	AMZ30P040FTC
17	DC Fan Motor 60	VXM1125	42	Screw	BBZ30P060FTC
18	PCB Support	AEC1215	43	Screw	BPZ30P080FTC
19	Rubber Foot	VEB1349	44	Screw	BSZ30P040FTC
20	Radiation Sheet (Silicone)	VEB1360	45	#6-32 Screw	DBA1125
21	Bonnet S	VXX3105	46	Screw	PBZ30P080FTC
22	Rear Panel	See Contrast table (2)			
NSP 23	Chassis	VNB1055			
NSP 24	PCB Base	VNE2378			
NSP 25	Writer Stay L	VNE2421			

(2) CONTRAST TABLE

DVR-640H-S/KUCXV, DVR-543H-S/KUCXV and DVR-540H-S/KUCXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-640H-S/KUCXV	DVR-543H-S/KUCXV	DVR-540H-S/KUCXV
NSP	3	MAIN Assy (for service)	VXX3157	VXX3157	VXX3159
	4	USBB Assy	VWV2161	VWV2161	Not used
	7	HDD 160G ST3160022RS	VXF1086	Not used	Not used
	7	HDD 80G WD800BBJKC S	Not used	VXF1066	VXF1066
	9	Service LOADER MAIN	VXU1001	VXU1001	VXU1002
	16	Housing USB (MAIN)	VKP2380	VKP2380	Not used
	22	Rear Panel	VNA2908	VNA2907	VNA2870

2.3 FRONT PANEL SECTION

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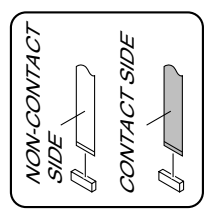
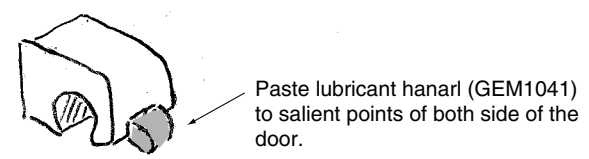
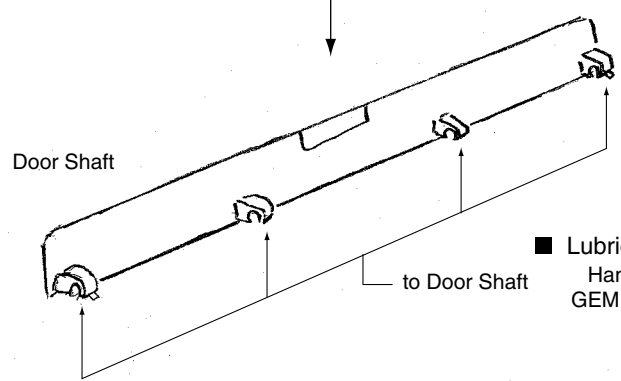
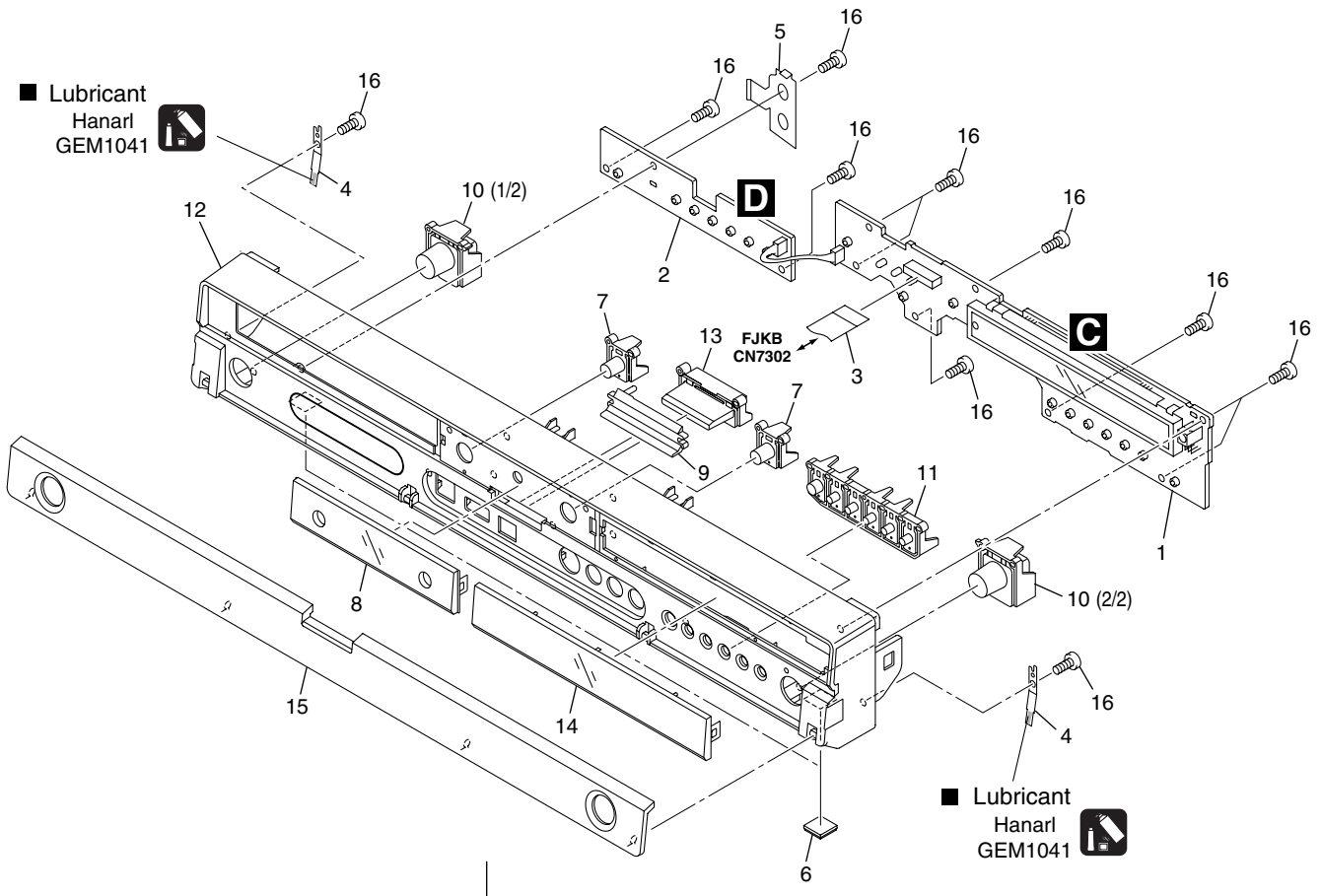
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(1) FRONT PANEL SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	FLKY Assy (for service)	VXX3111
2	KEYB Assy (for service)	VXX3112
3	Flexible Cable 12P	VDA2116
4	Door Spring	VBK1159
5	Earth Plate	VBK1166
6	Rubber Foot	VEB1349
7	Sub Key	VNK5909
8	Center Cover	VNK5911
9	LED Lens	VNK5913
10	Main Key	See Contrast table (2)
11	Function Key	VNK5936
12	Front Panel	See Contrast table (2)
13	Center Key	See Contrast table (2)
14	FL Lens PTD	See Contrast table (2)
15	Door PTD	See Contrast table (2)
16	Screw	BPZ30P080FTC

(2) CONTRAST TABLE

DVR-640H-S/KUCXV, DVR-543H-S/KUCXV and DVR-540H-S/KUCXV are constructed the same except for the following:

<u>Mark</u>	<u>No.</u>	<u>Symbol and Description</u>	<u>DVR-640H-S/KUCXV</u>	<u>DVR-543H-S/KUCXV</u>	<u>DVR-540H-S/KUCXV</u>
	10	Main Key	VNK6113	VNK6113	VNK5908
	12	Front Panel	VNK5978	VNK5978	VNK5966
	13	Center Key	VNK6114	VNK6114	VNK6025
	14	FL Lens PTD	VXA2741	VXA2801	VXA2740
	15	Door PTD	VXA2778	VXA2778	VXA2776

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

3.1.1 OVERALL BLOCK DIAGRAM

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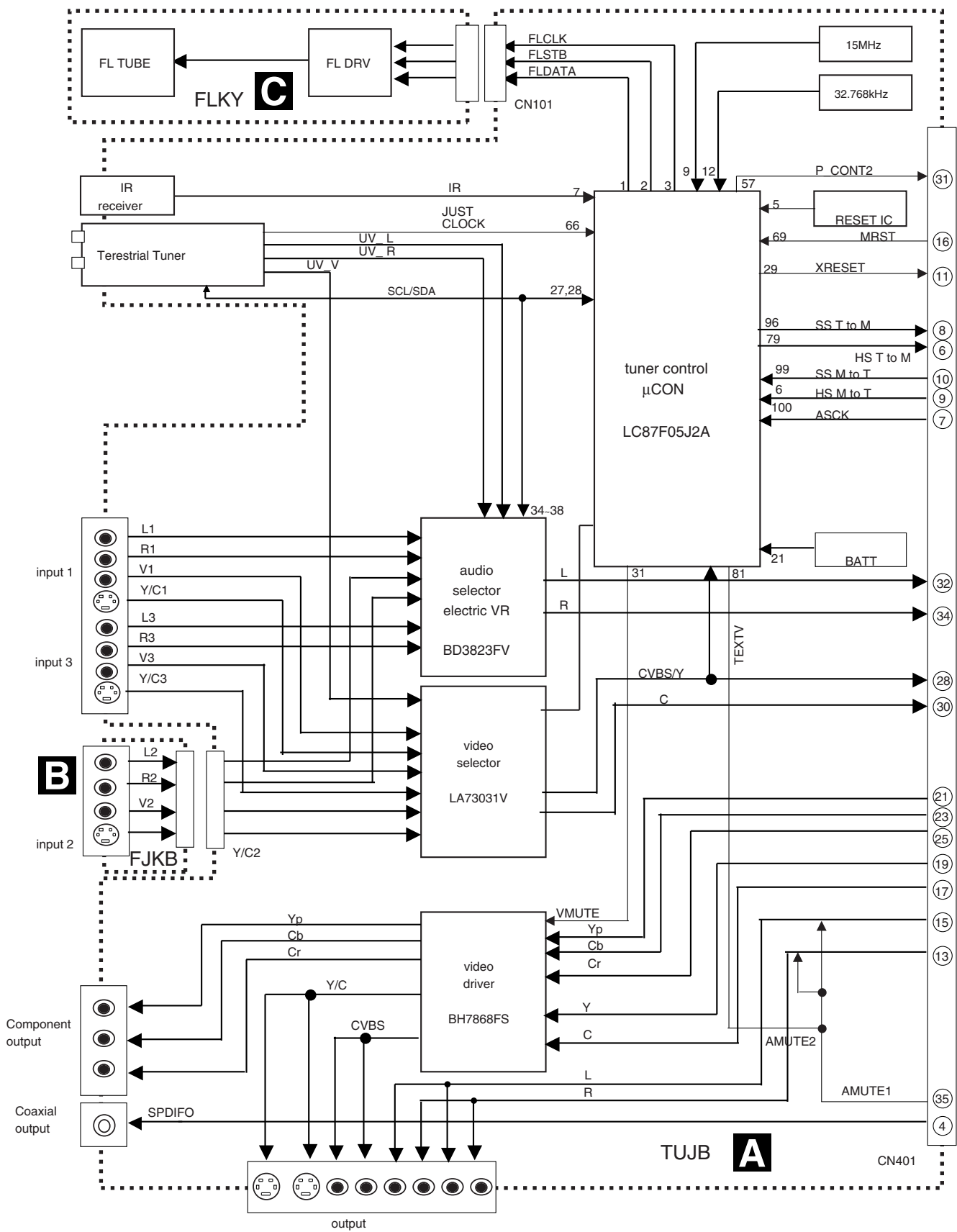
B

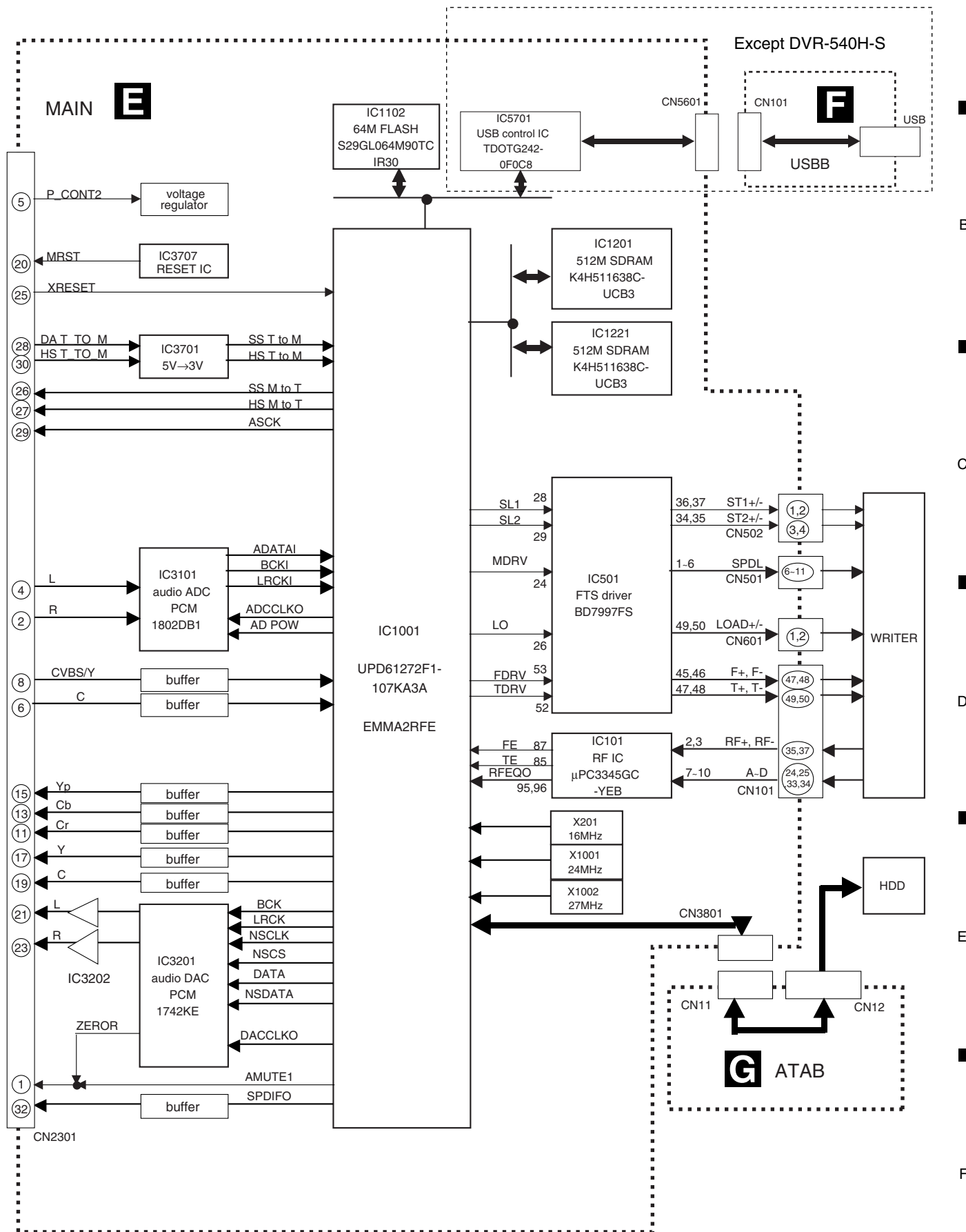
C

D

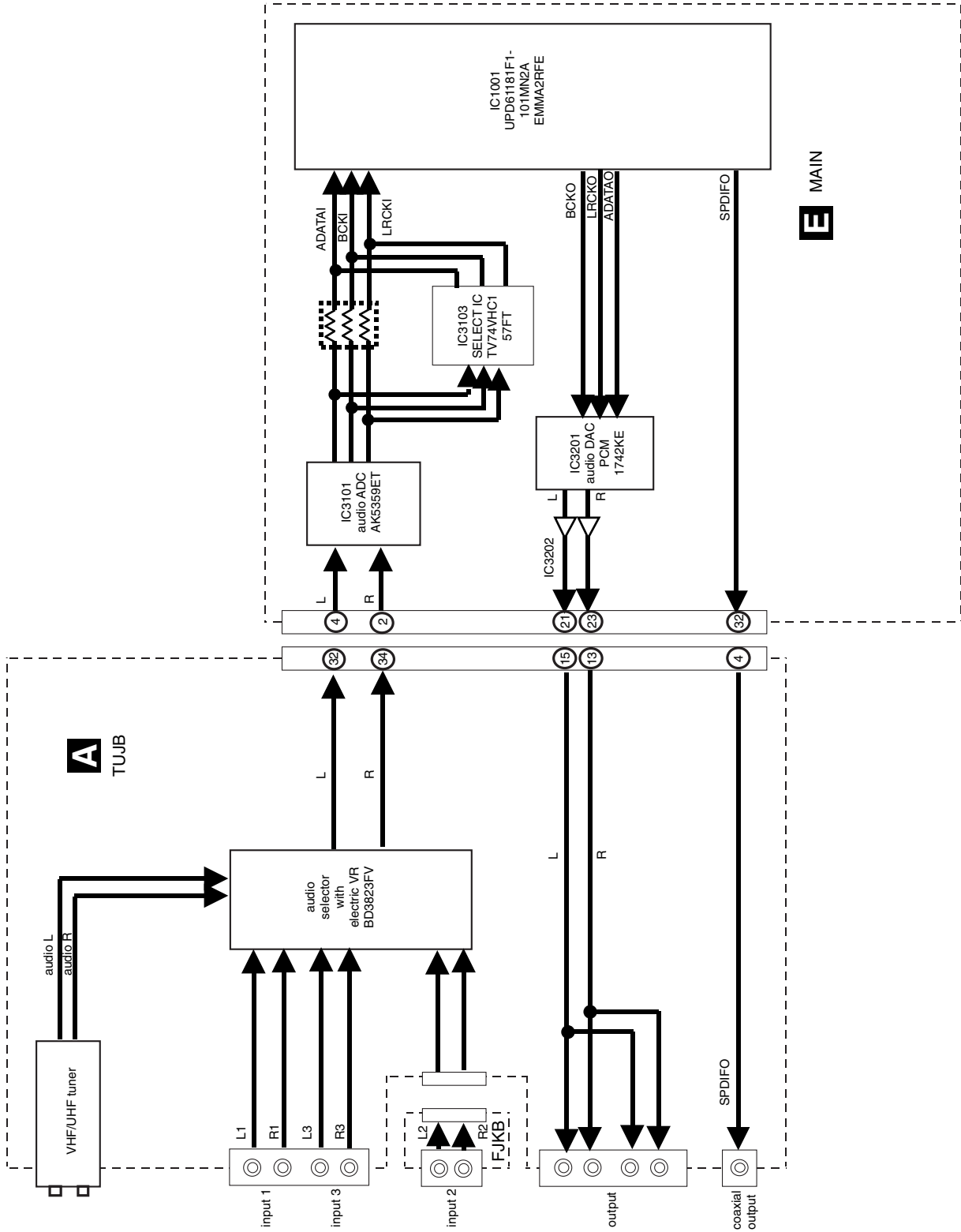
E

F





3.1.2 AUDIO BLOCK DIAGRAM



■ 5 ■



3.2 OVERALL WIRING DIAGRAM

A

B

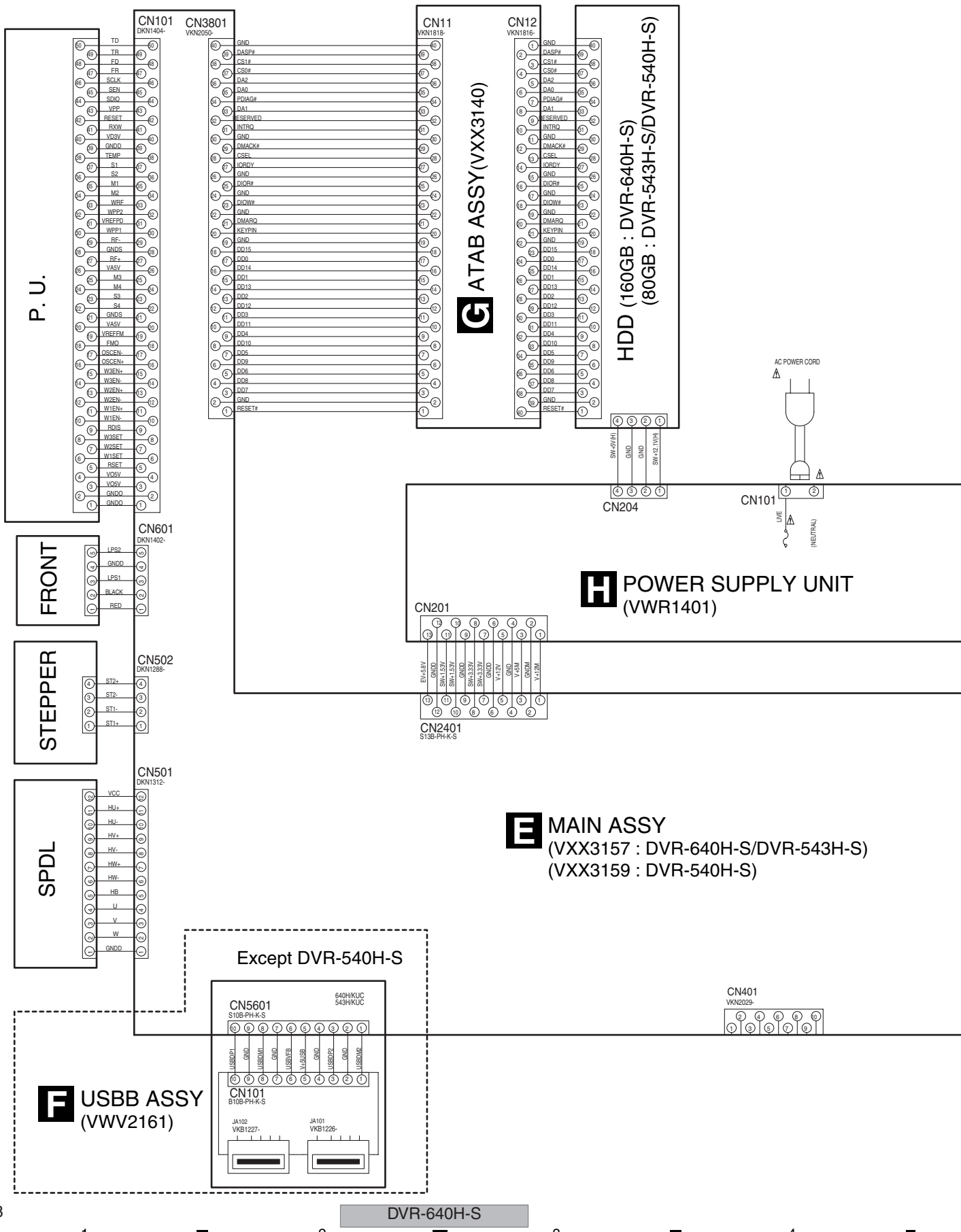
C

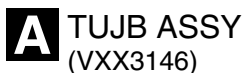
D

E

F

18





- DVR-640H-S

4

B

C

D

E

F

A 2/3

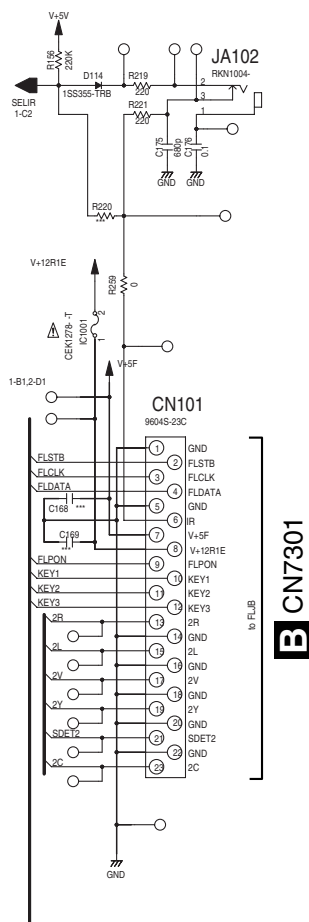
A 3/3

Lithium Battery

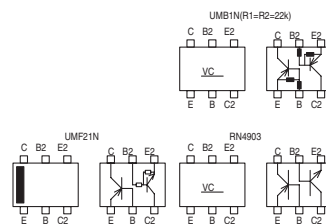
A 1/3

DVR-640H-S

A 1/3 TUJB ASSY (VXX3146)



B CN7301



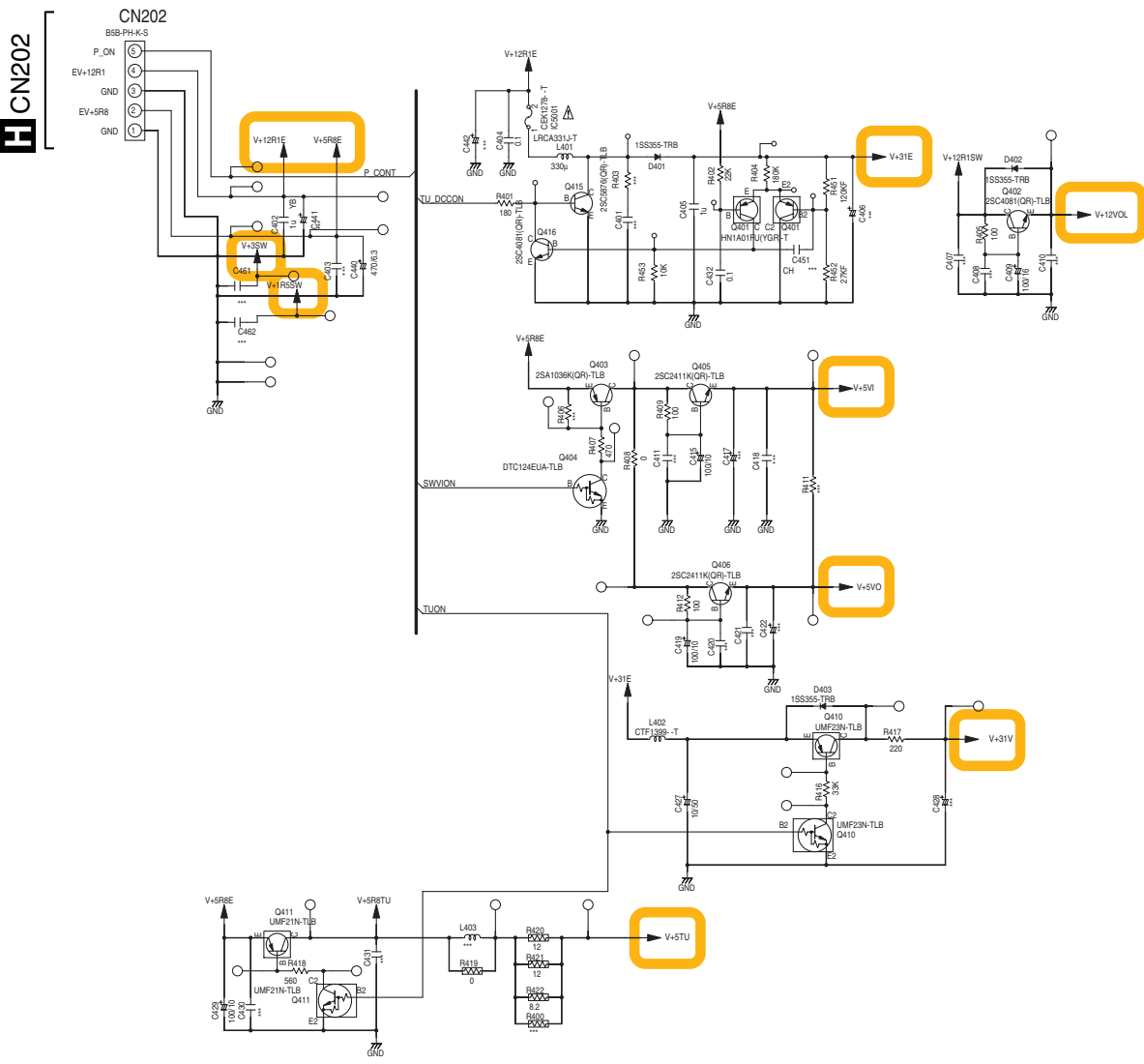
4

C



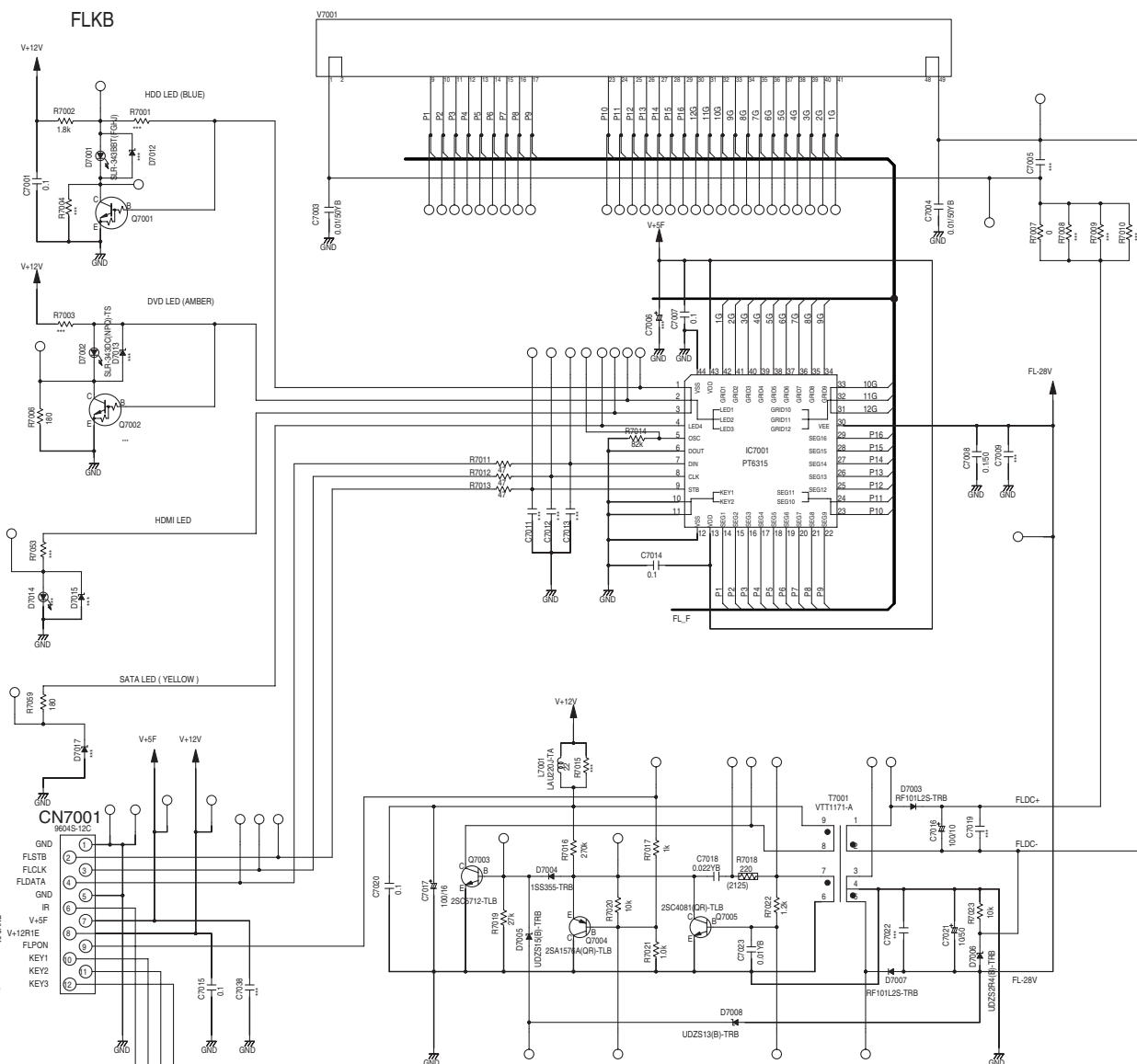
F

3.5 TUJB ASSY(3/3)



3.6 FJKB, FLKY and KEYB ASSYS

FLKB



DC-DC Converter

FLKY ASSY (VXX3111)

- SWITCHES**
- S7001 : HDD / DVD
 - S7002 : Pause Live TV
 - S7003 : Stop
 - S7004 : Rec Mode
 - S7005 : Rec Stop
 - S7006 : REC
 - S7007 : Open / Close
 - S7008 : -
 - S7009 : +
 - S7010 : Play

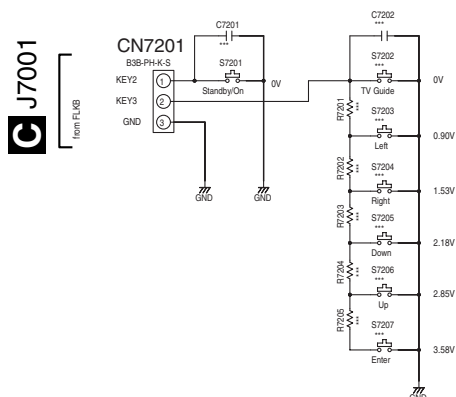
KEY MATRIX

KEY MATRIX

S7001-S7010: VSG1024-A-T

D KEYB ASSY (VXX3112)

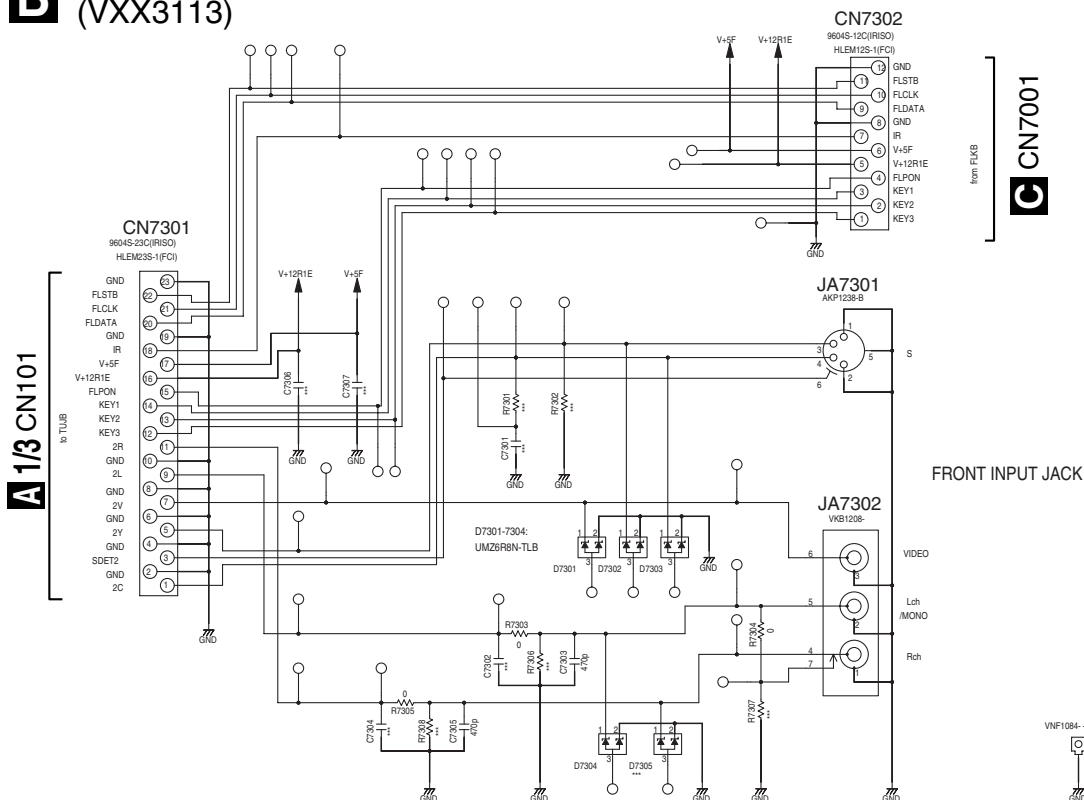
SWITCHES
S7201 : Standby / On



KEY MATRIX

S7201-S7207: VSG1024-A-T

B FJKB ASSY (VXX3113)



3.7 MAIN ASSY(1/4)

E 1/4 MAIN ASSY

(VXX3157 : DVR-640H-S/DVR-543H-S)
(VXX3159 : DVR-540H-S)

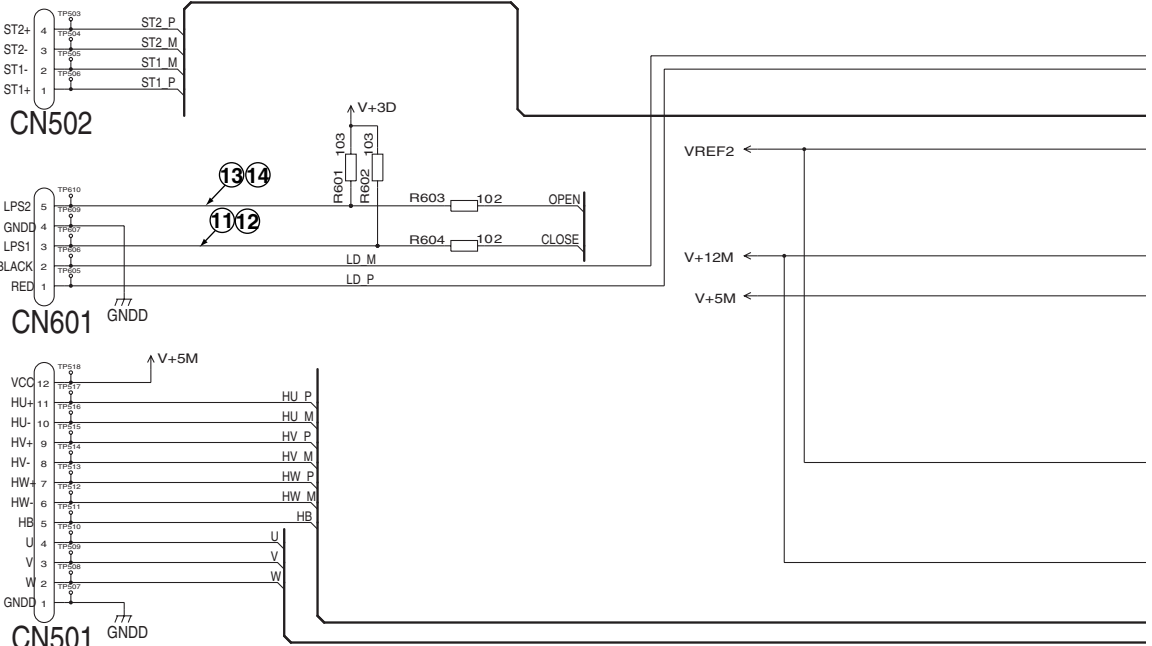
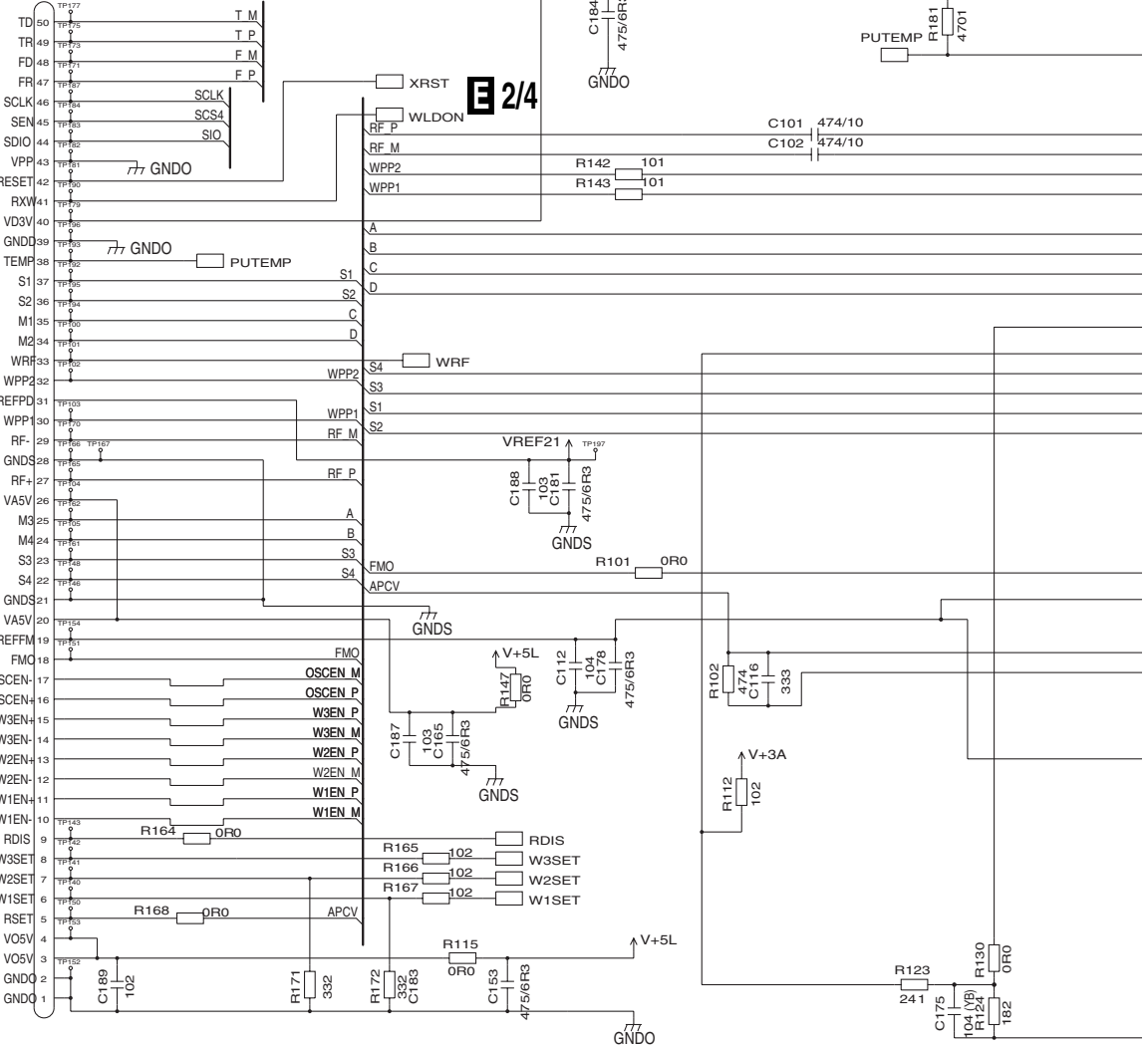
CN101

For Pick-Up
DKN1404-A-TBB

For Stepper
DKN1288-

For FRONT
DKN1402-A

For SPDL
DKN1312-A-TFB

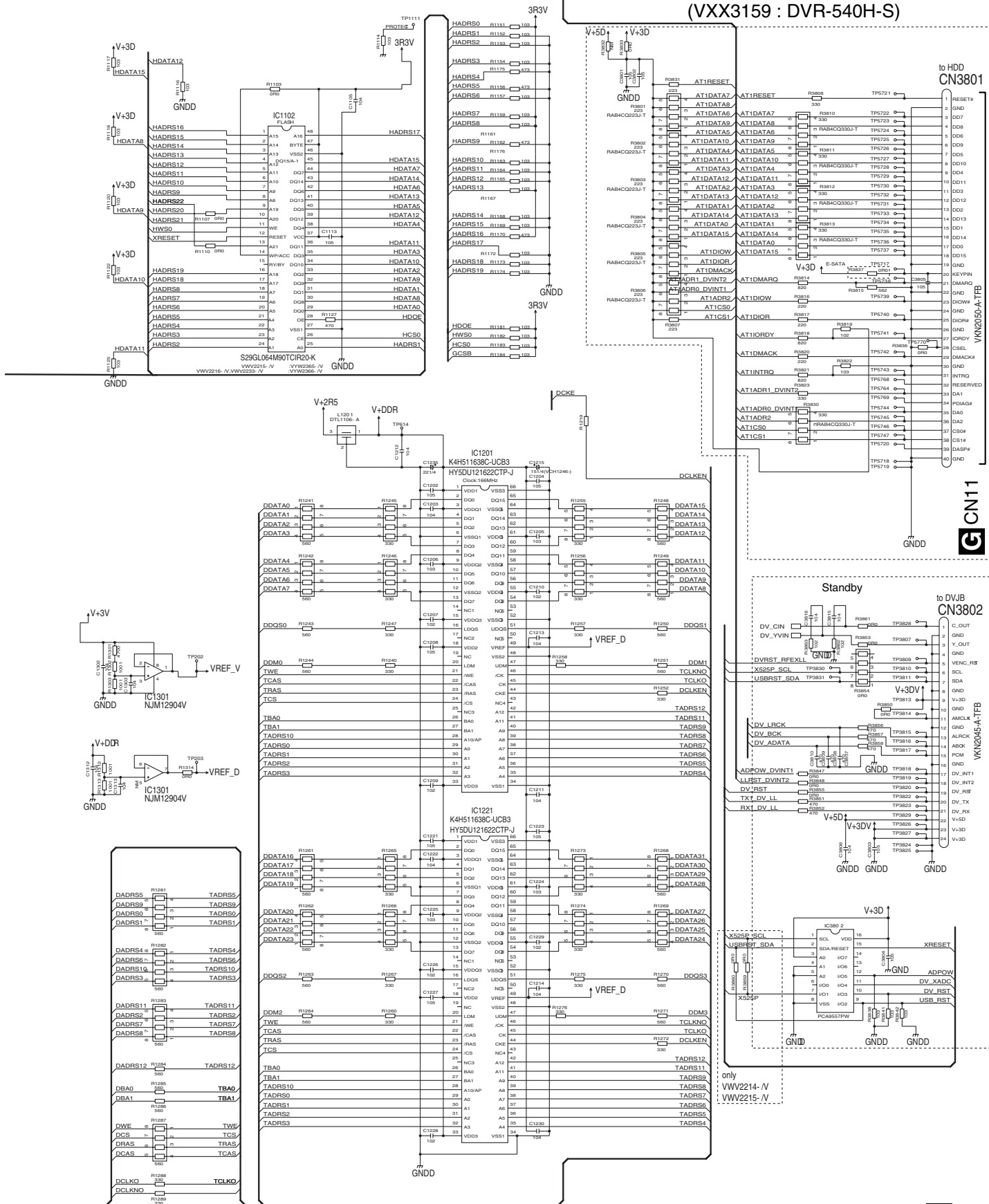




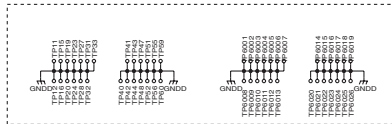
△



E 2/4 MAIN ASSY (VXX3157 : DVR-640H-S/DVR-543H-S) (VXX3159 : DVR-540H-S)



4





3.10 MAIN ASSY(4/4)

A

B

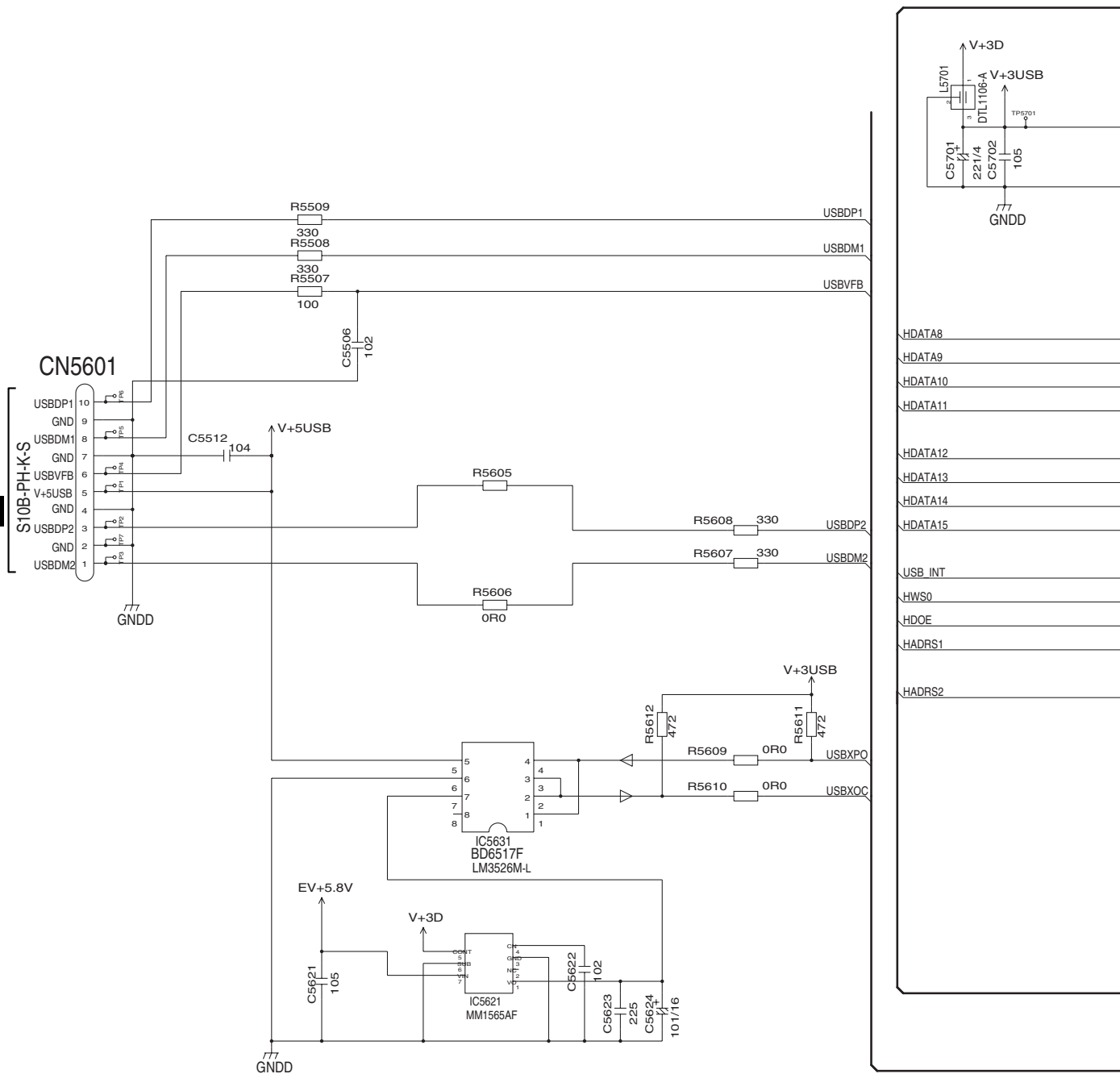
C

D

E

F

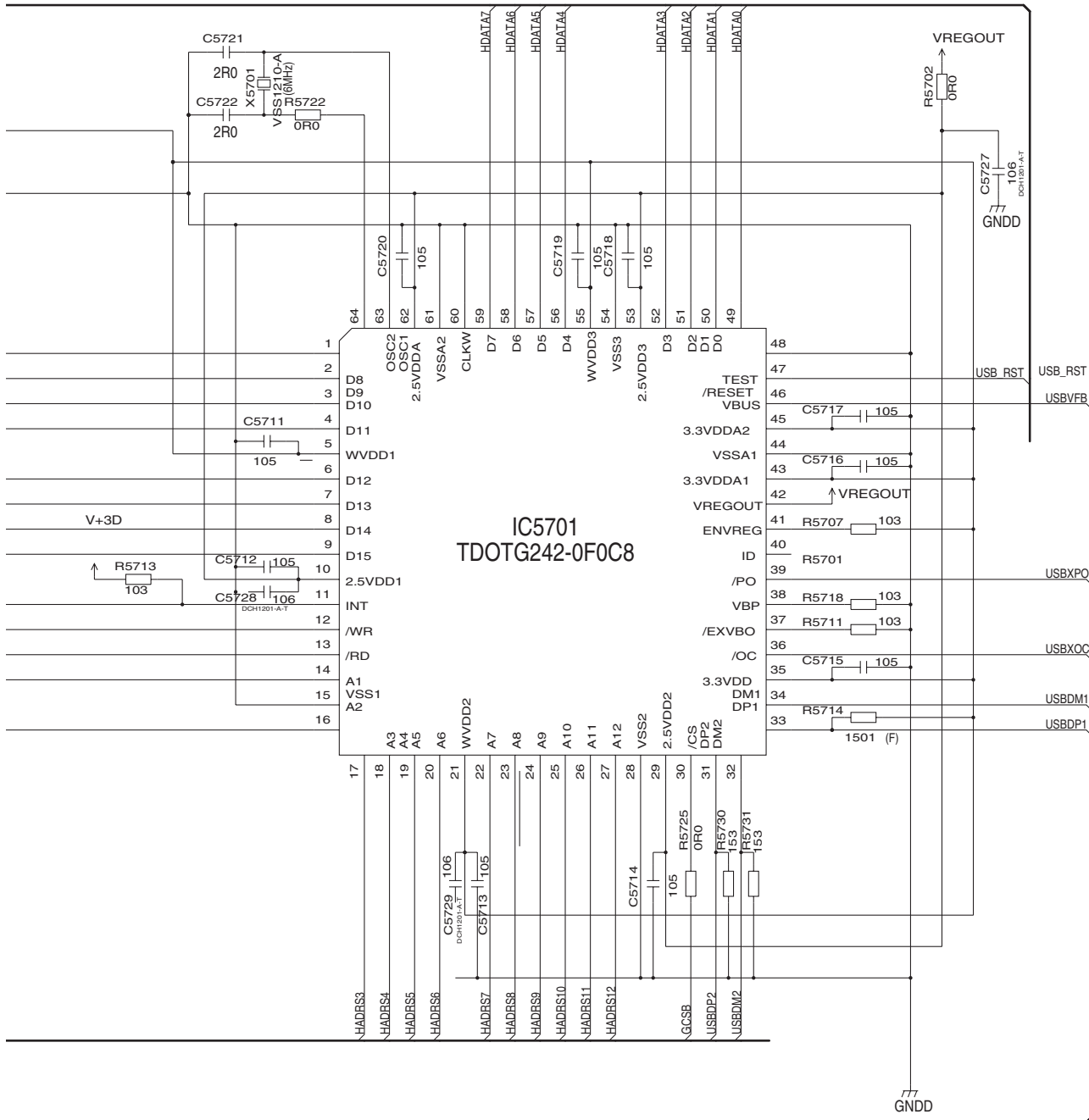
F CN101



E 4/4 MAIN ASSY

(VXX3157 : DVR-640H-S/DVR-543H-S)
(VXX3159 : DVR-540H-S)

This block is only for DVR-640H-S and DVR-543H-S.



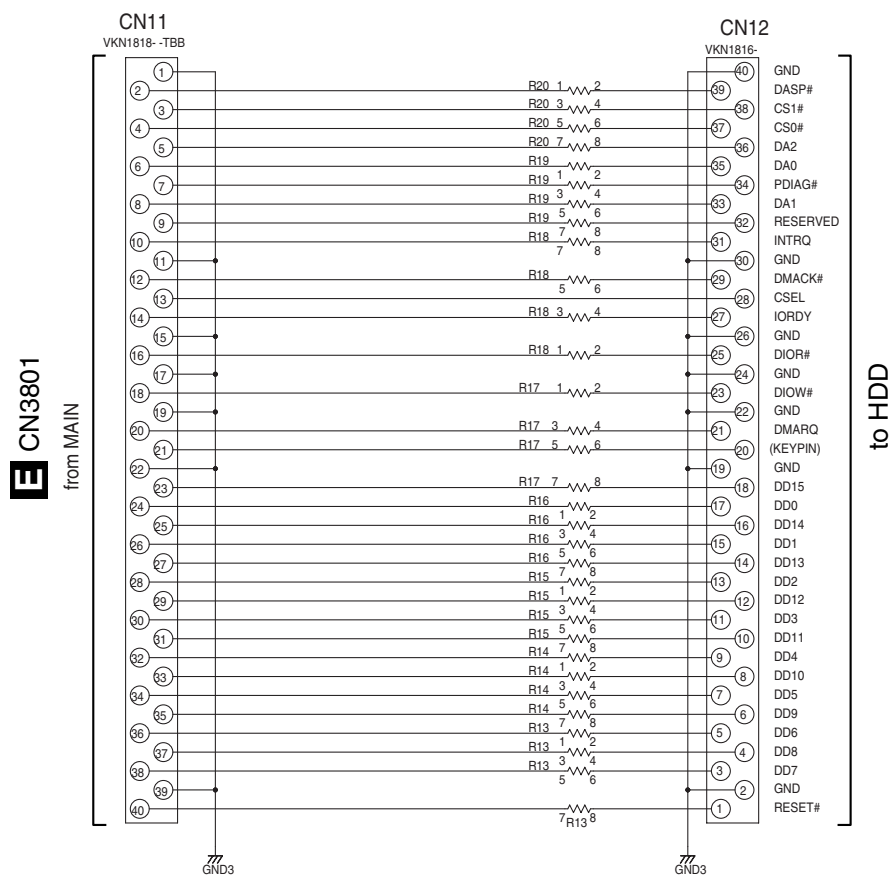
△

A



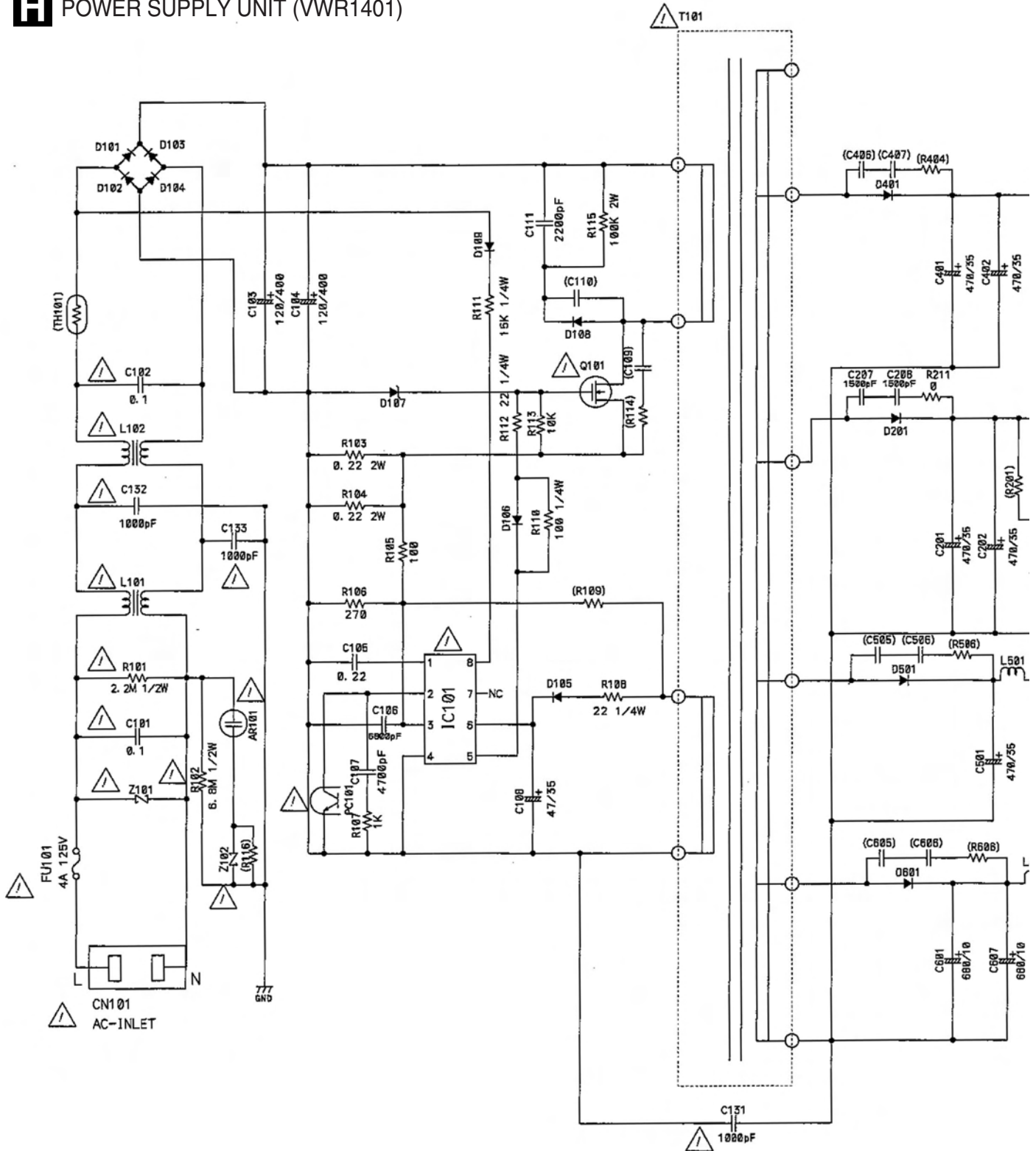
F

ATAB ASSY (VXX3140)



3.13 POWER SUPPLY UNIT

POWER SUPPLY UNIT (VWR1401)



Unit	Resistor	Ω/W (under 1/4W for no direction W)
	Capacitor	$\mu F/V$ (under 50V for no direction V)



3.14 WAVE FORMS

Note : The encircled numbers denote measuring point in the schematic diagram.

A TUJB ASSY

Measurement Condition :

No.1, No.19 : 1kHz, 2Vrms

No.2 : 1kHz, MONO. 60% mod

No.4 - No.18 : 75% Color-bar (100 / 0 / 75 / 0)

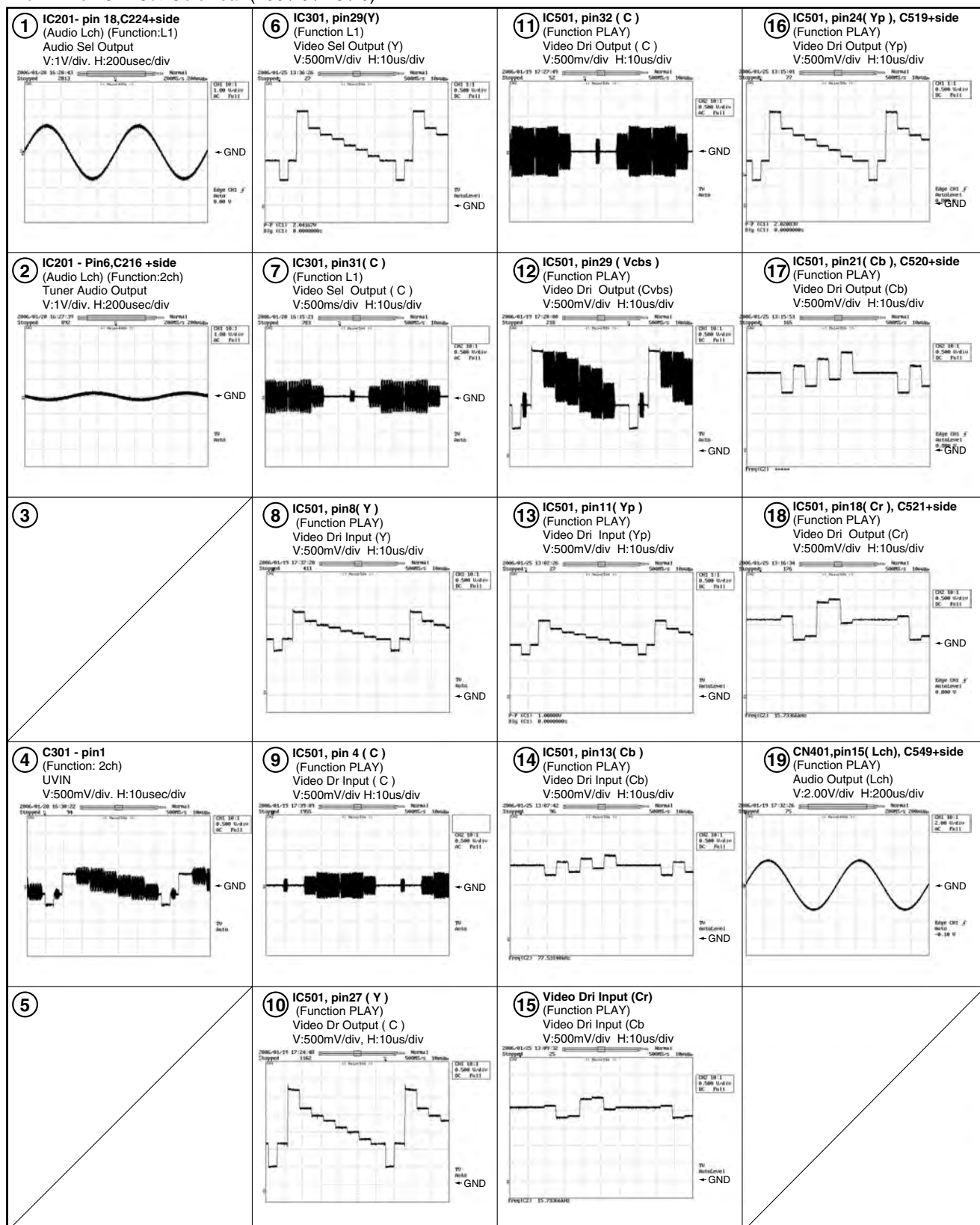
B

C

D

E

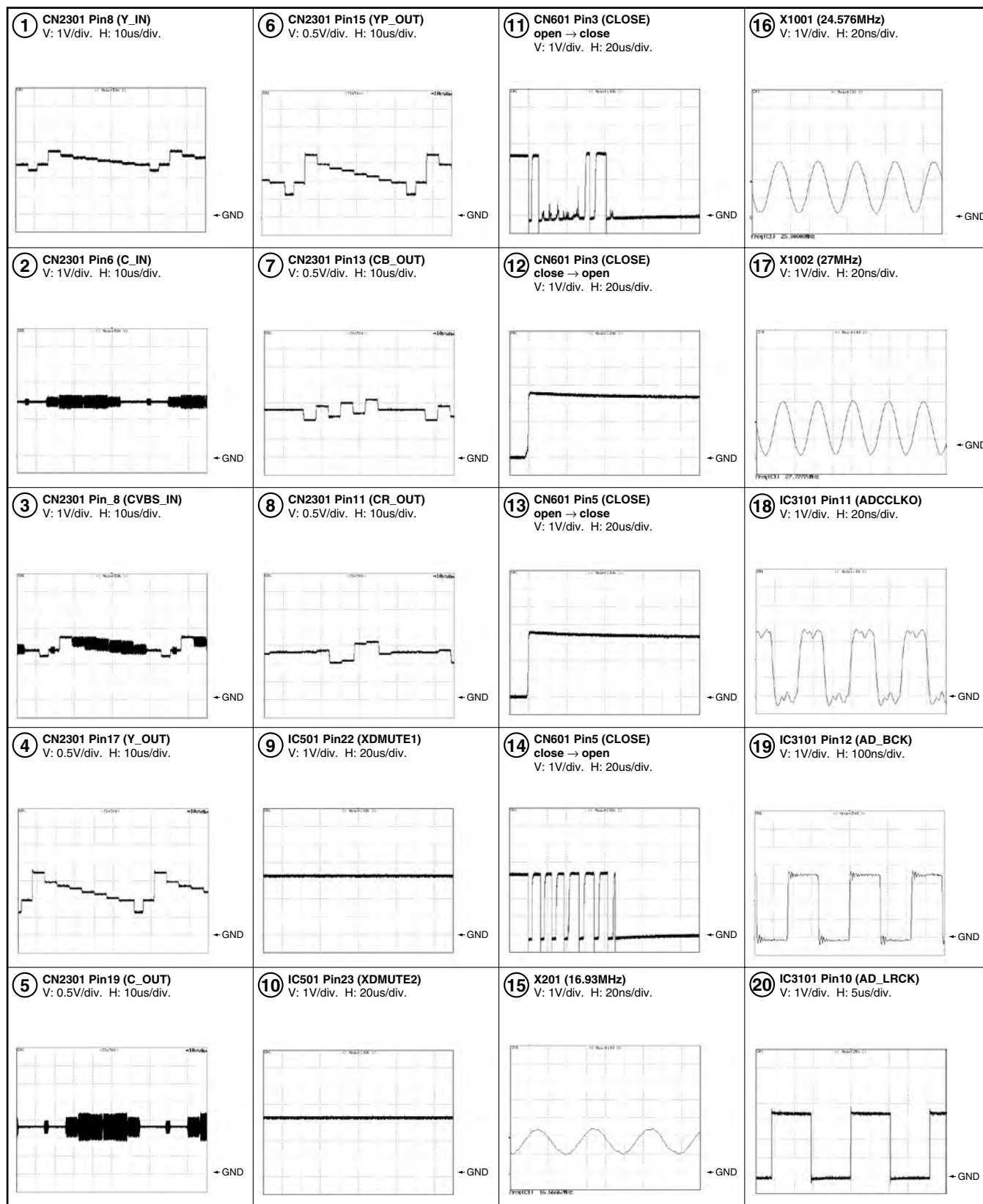
F



E MAIN ASSY

Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)



E MAIN ASSY

A

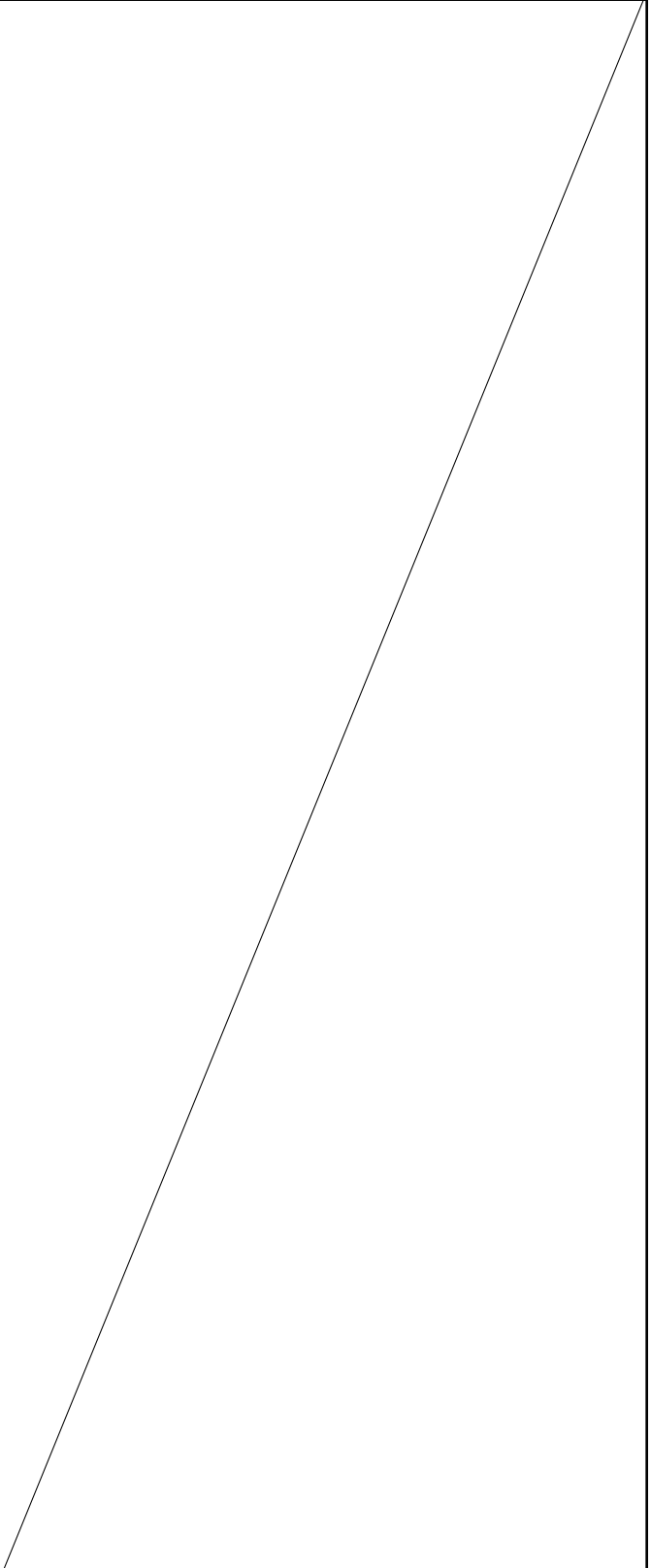
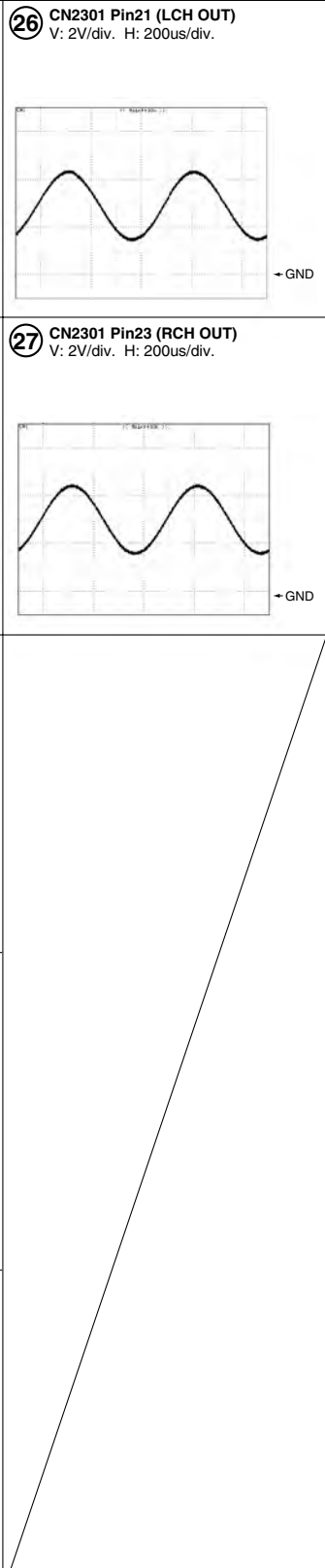
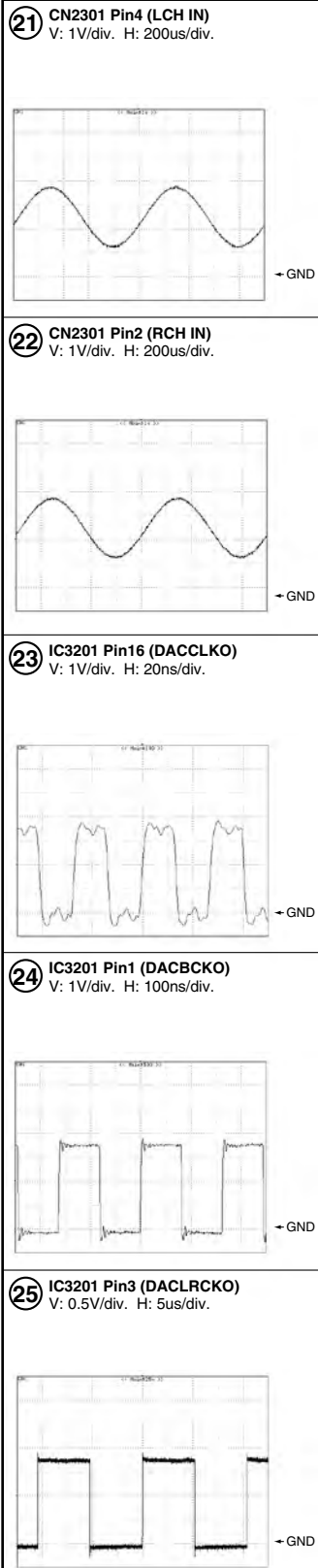
B

C

D

E

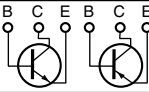
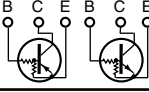
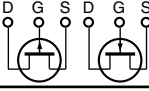
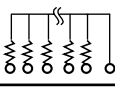
F



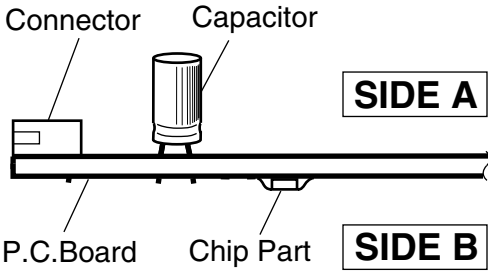
5678

4. PCB CONNECTION DIAGRAM

- NOTE FOR PCB DIAGRAMS :**
- 1. Part numbers in PCB diagrams match those in the schematic diagrams.
 - 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

- 3. The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.
- 4. View point of PCB diagrams.



4.1 TUJB ASSY

SIDE A

A TUJB ASSY

Q409

CN403

ICT FC
PC

TUJB

VWM2359
VWM2360
VWM2362

A

B

C

D

E

F



SIDE B

A

B

C

D

E

F

A TUJB ASSY

IC Q

Q411

Q407

Q107

Q506

Q515 Q514

Q503 Q408

Q602

Q512

Q504 Q414

Q511

Q505

Q405

Q112 Q413

Q410

IC5001

IC301

IC201

IC501

Q403

Q301

Q415 Q417

Q412

IC401

Q502 Q404

Q304 Q303 Q416

Q101

Q351 Q418

Q501 Q603

Q361 Q362

Q305

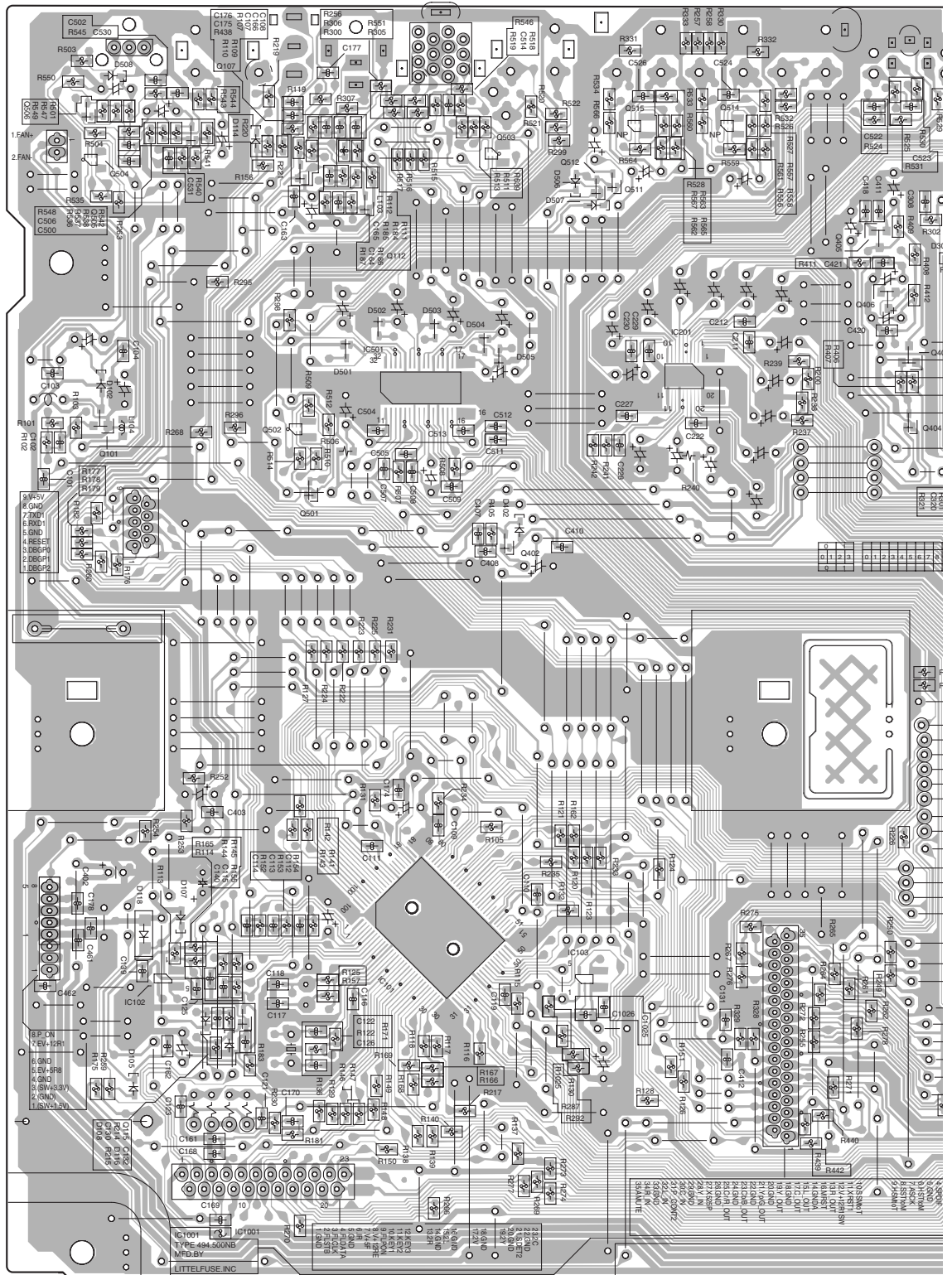
Q402

IC103

IC101

IC102

Q115



SIDE B

A

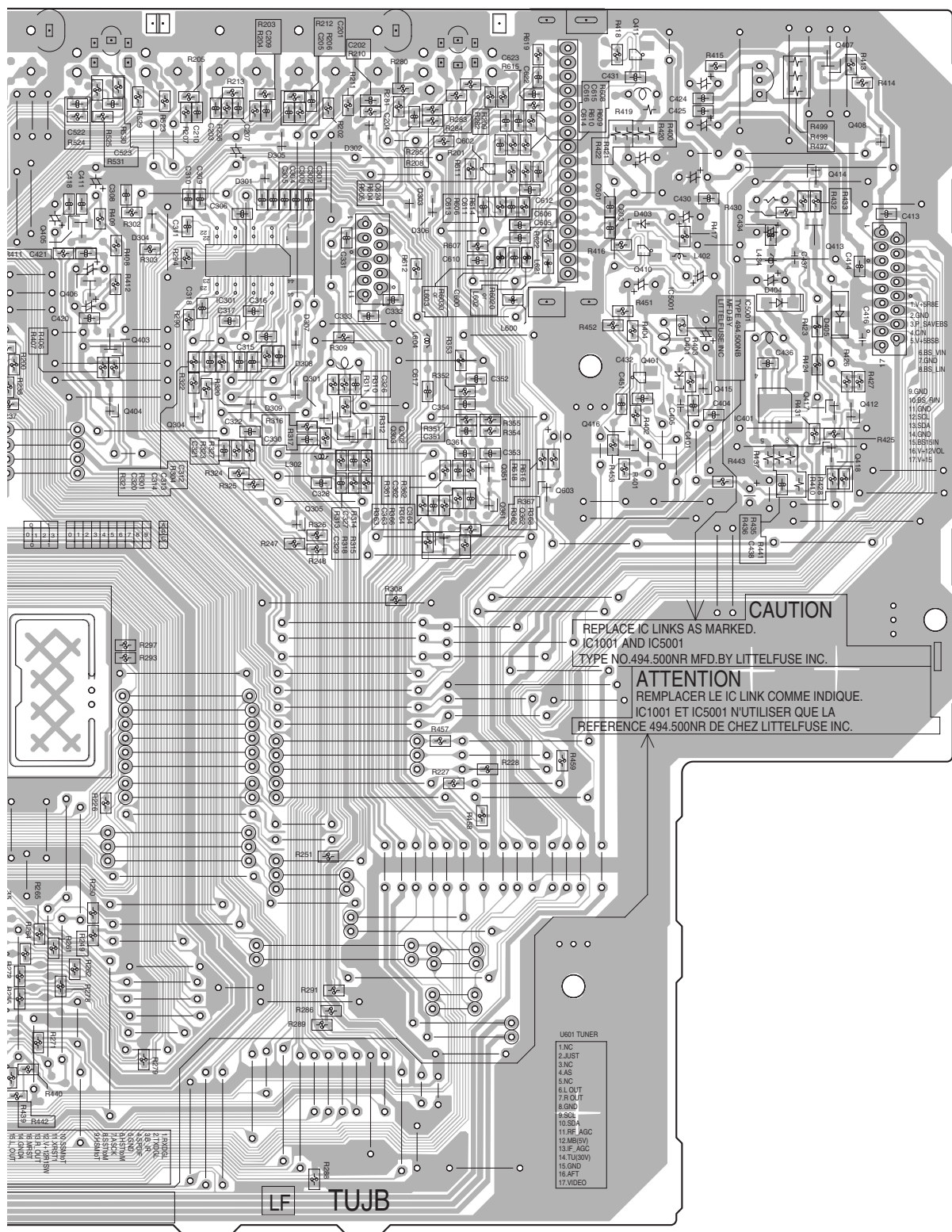
B

C

D

E

F



(VNP2032-B)

DVR-640H-S

A

4.2 FJKB, FLKY and KEYB ASSYS

SIDE A

SIDE A

B FJKB ASSY

A CN101

C FLKY ASSY

D KEYB ASSY

(VNP2035-B)

(VNP2035-B)

CN7201

J7001

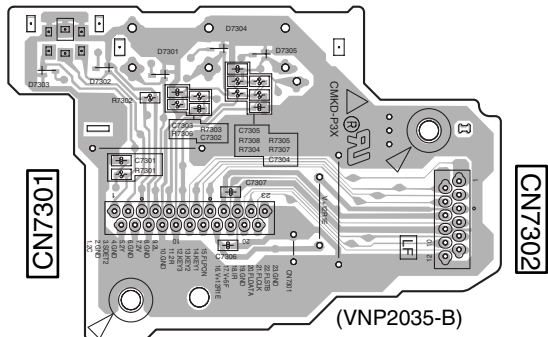
DVR-640H-S

B C D

SIDE B

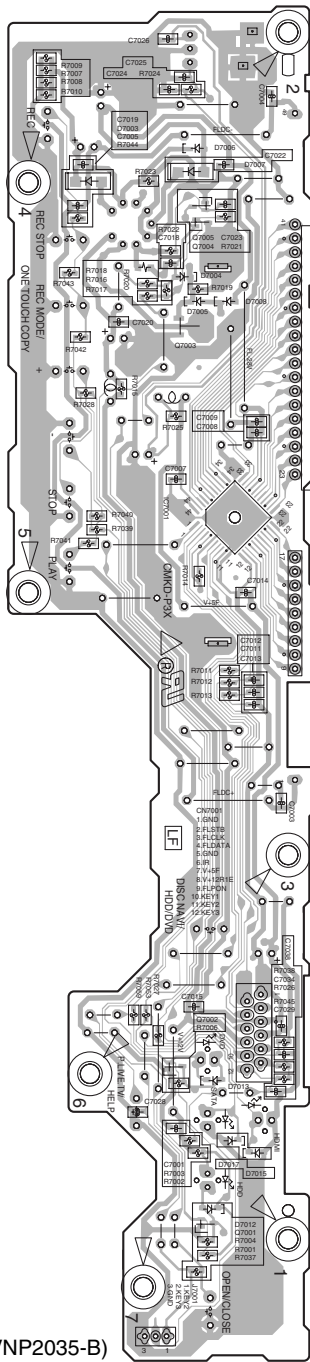
SIDE B

C FJKB ASSY



(VNP2035-B)

D FLKY ASSY



(VNP2035-B)

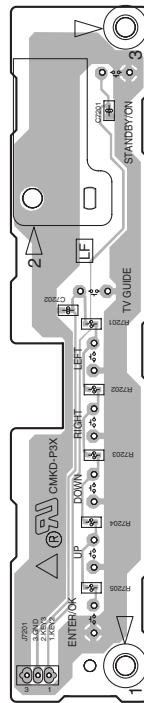
J7001

IC7001

Q7003
Q7004
Q7005
Q7006

Q1/C

E KEYB ASSY



(VNP2035-B)

CN7201

CDE

CDE

SIDE A

MAIN ASSY

Q	IC
---	----

H CN201

CN2401

DVR-640H-S

G CN11

CN401

A

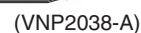
B

C

D

E

F



1

SIDE B

E MAIN ASSY

to Pick U

CN101

Q

IC

IC5702

IC501

IC5701

IC102

IC5621

IC101

IC1102

IC5631

IC4512

IC4507

IC3802

Q1111

Q1811

IC4511

Q1801

IC4531

IC4531

Q2502

IC3103

Q3712

IC1201

Q3711

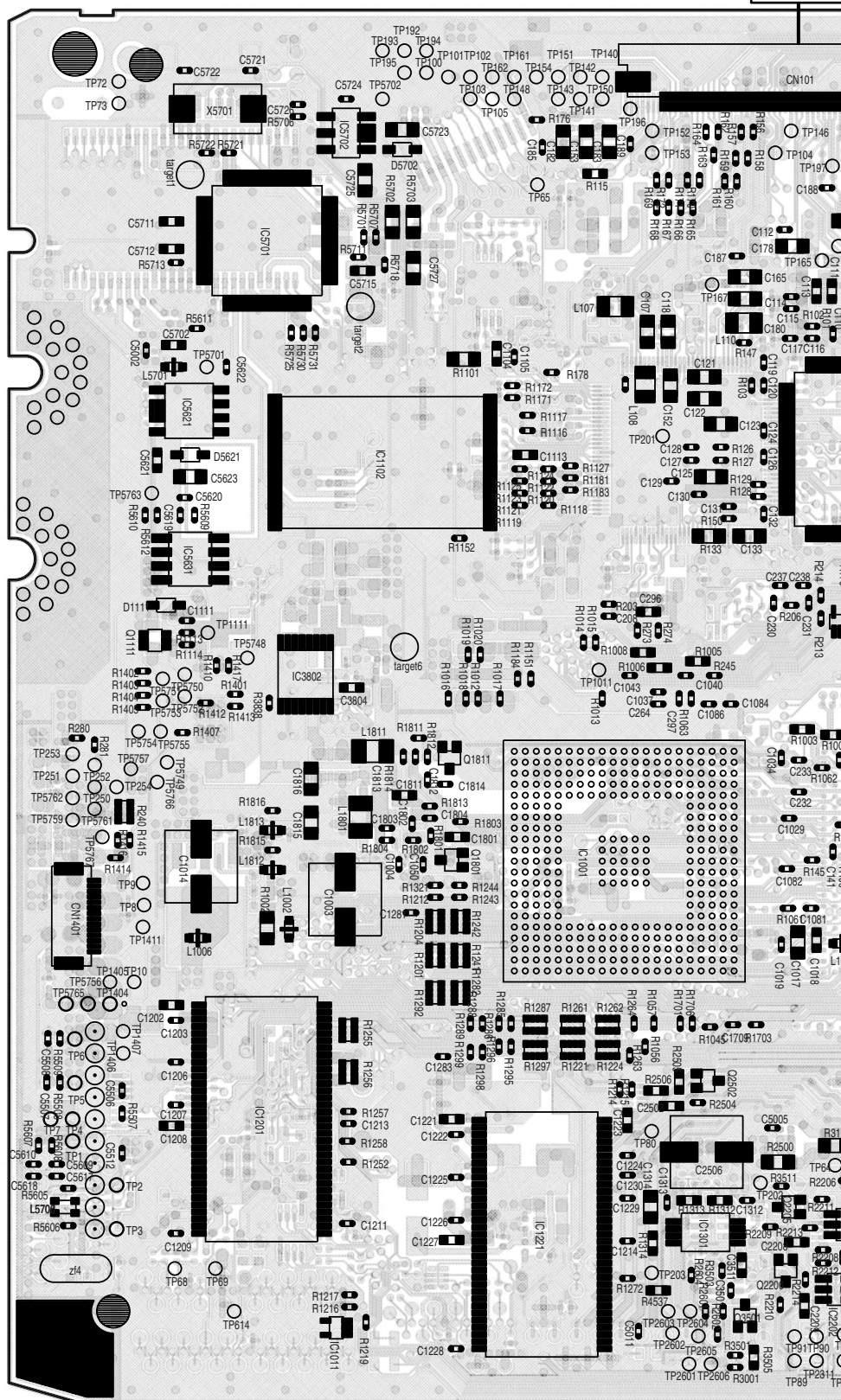
Q4561

182201

IC1221

Q3501

IC2202



A



D

F

F

DVR-640H-S

1 2 3 4

4.4 USBB ASSY (Except DVR-540H-S)

SIDE A

SIDE A

A

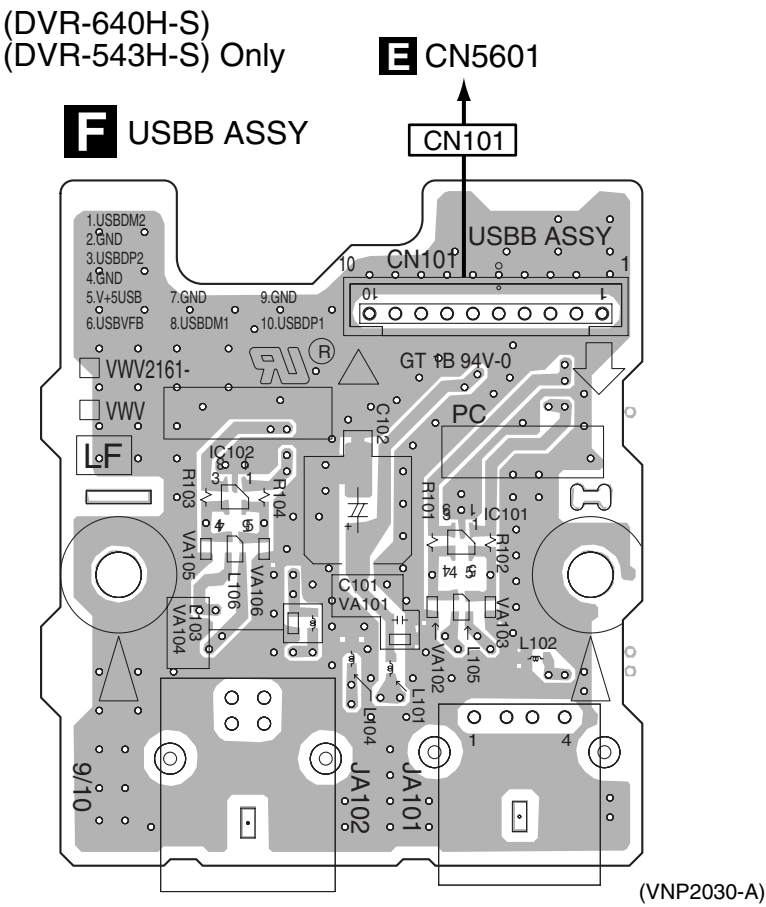
B

C

D

E

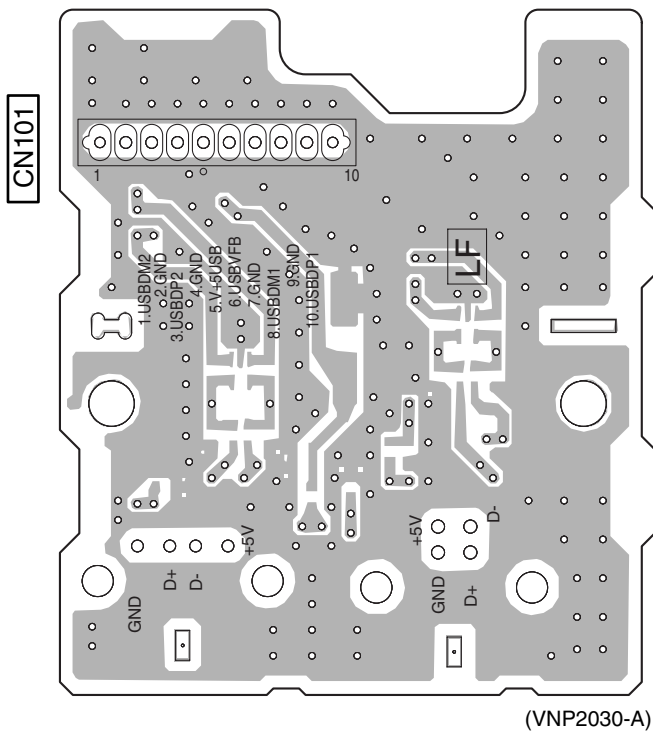
F



SIDE B

SIDE B

F USBB ASSY (DVR-640H-S)
(DVR-543H-S) Only



F

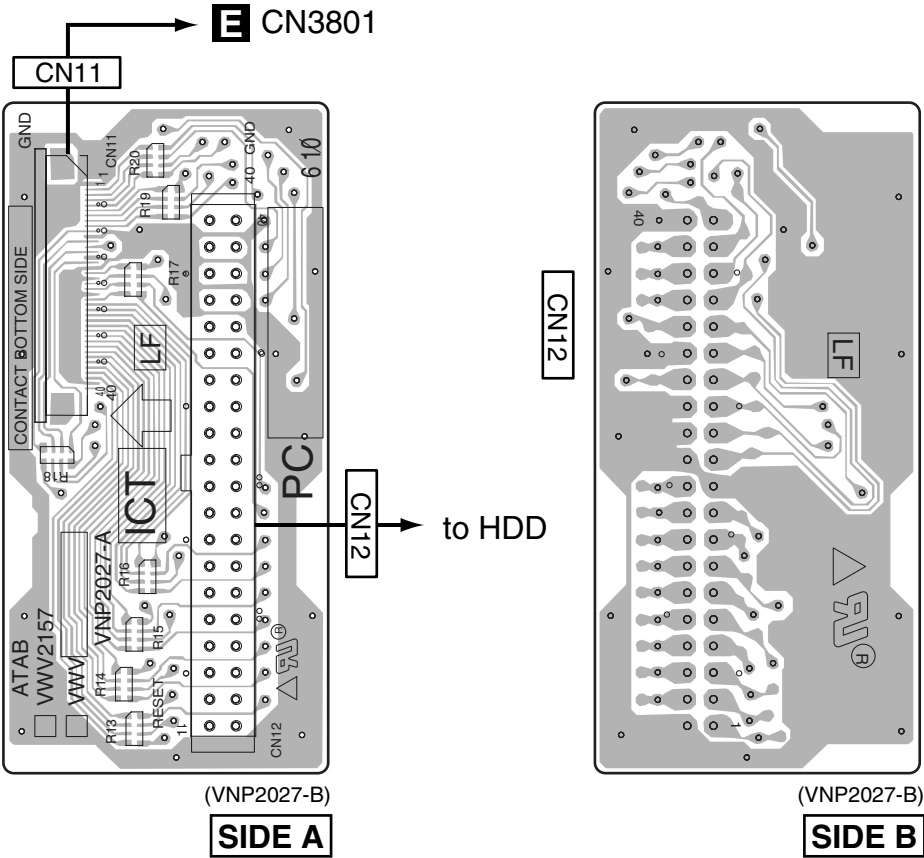
F

4.5 ATAB ASSY

SIDE A

G ATAB ASSY

SIDE B



■

5

■

6

■

7

■

8

■

A

■

B

■

C

■

D

■

E

■

F

■

5

■

6

■

7

■

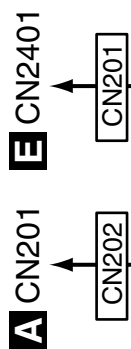
8

■

DVR-640H-S

SIDE A

SIDE A



SIDE B

SIDE B

A

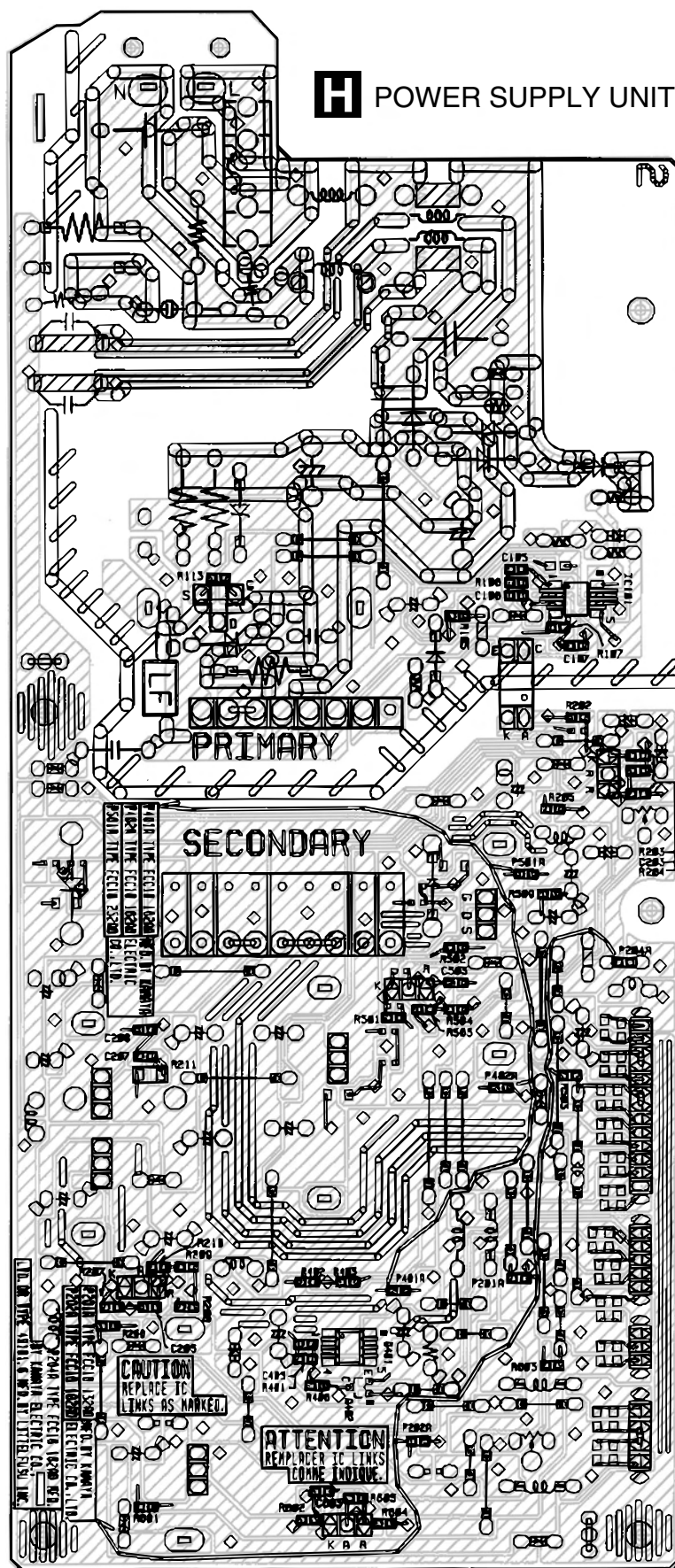
B

C

D

F

F



A

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

$$I\Omega \rightarrow IR0 \cdots \cdots \cdots RSIP \boxed{I} \boxed{R} \boxed{0} K$$

$$5.62k\ \Omega \rightarrow 562 \times 10^1 \rightarrow 5621 \dots\dots\dots RN1/4PC\boxed{5}\boxed{6}\boxed{2}\boxed{1}F$$

B

CD

COILS AND FILTERS

L0102

ATH1109

C0307, C0440, C0520, C0521
C0405

CEAT471M6R3
CKSQYF105Z50

Mark No. Description**Part No.****Mark No. Description****Part No.**

IC3707
 ⚠ IC4512
 ⚠ IC4507, IC4511
 ⚠ IC4504

PST3813U
 S-1170B25UC-OTK
 S-1170B33UC-OTS
 S-1170B50UC-OUJ

C2208, C2209, C2501, C296

 C3102, C3103, C3107, C3511, C3703
 C3738, C3801-C3805, C5621, C5702
 C5711-C5720
 C1010, C1016, C1019, C1022, C1025
 C1046, C1049, C1054, C1057, C1059

CKSRYF105Z10

 CKSRYF105Z10
 CKSRYF105Z10
 CKSSYB102K50
 CKSSYB102K50

IC3103
 IC3102
 IC3701
 IC5701
 IC101

TC74VHC157FT
 TC7SZ126FU
 TC7WH34FU
 TDOG242-0F0C8
 UPC3345GC-YEB-A

C1064, C1067, C1068, C1207
 C1209, C1210, C1226, C1228, C1229
 C151, C189, C261, C4527, C4550
 C5506, C5622
 C119, C1205, C1206, C1224, C1225

CKSSYB102K50
 CKSSYB102K50
 CKSSYB102K50
 CKSSYB102K50
 CKSSYB103K16

IC3202
 IC1001
 IC1102
 Q1801, Q1811, Q2205, Q2206
 Q2501-Q2505

UPC4570G2-A
 UPD61272F1-107KA3A
 VYW2366
 2SA1576A
 2SA1576A

C129, C130, C142, C164, C1709
 C187, C188, C221, C2223, C2224
 C3701, C4509
 C1026, C1029, C103, C1034, C1037
 C104, C1040, C1043, C112, C117

CKSSYB103K16
 CKSSYB103K16
 CKSSYB103K16
 CKSSYB104K10
 CKSSYB104K10

Q3501, Q4561
 Q101
 D3201
 D3711, D3712
 D101

2SC4081
 RT1N141U
 DAN202U
 RB501V-40
 SML-310YT

C124, C126-C128, C132
 C143, C144, C150, C156, C163
 C167, C172, C175, C2301, C2302
 C260, C3806, C3815, C3816
 C504, C505

CKSSYB104K10
 CKSSYB104K10
 CKSSYB104K10
 CKSSYB104K10
 CKSSYB104K10

COILS AND FILTERS

L1010, L106, L107, L112 CHIP COIL
 L1001, L1003, L1004, L1006-L1008
 L1201, L3102, L5701 EMI FILTER
 L1811
 L1801

BTH1103
 DTL1106
 DTL1106
 LCYA150J2520
 LCYA390J2520

C137
 C145, C146
 C224, C230, C231
 C108, C110, C139, C141, C1802
 C3204

CKSSYB182K50
 CKSSYB222K50
 CKSSYB223K16
 CKSSYB331K50
 CKSSYB331K50

CAPACITORS

C1081
 C158-C162, C1813
 C3207, C3211
 C1902, C1911
 C1812

CCSSCH100D50
 CCSSCH101J50
 CCSSCH121J50
 CCSSCH150J50
 CCSSCH151J50

C114
 C116
 C232, C233
 C148, C220, C223
 C147, C1804, C1814, C532

CKSSYB332K50
 CKSSYB333K10
 CKSSYB471K50
 CKSSYB472K25
 CKSSYB473K10

C1901, C1912
 C1803
 C169, C171, C509
 C3501, C3808-C3810
 C1084-C1087

CCSSCH180J50
 CCSSCH221J50
 CCSSCH390J50
 CCSSCH470J50
 CCSSCH5R0C50

C297, C3208, C3210
 C138
 C154, C236
 C115
 C1002, C1004, C1007, C1045, C1048

CKSSYB681K50
 CKSSYB682K25
 CKSSYB683K10
 CKSSYB822K16
 CKSRYF104Z16

C510
 C264
 C5721, C5722
 C3212
 C1708, C4507

CCSSCH620J50
 CCSSCH680J50
 CCSSCK2R0C50
 CEAT102M6R3
 CEVW100M16

C1050, C1051, C1053, C1056, C1058
 C1060, C1063, C1066, C1069, C1082
 C1105, C1203, C1211-C1214, C1222
 C1230, C1302, C1303, C1312, C1313
 C1701-C1707, C2401-C2406, C3101

CKSSYF104Z16
 CKSSYF104Z16
 CKSSYF104Z16
 CKSSYF104Z16
 CKSSYF104Z16

C2506, C3106, C3214, C3216, C4542
 C4563, C5624
 C1001, C1003, C1005, C1014, C1020
 C1071, C1074, C1235, C5701
 C511

CEVW101M16
 CEVW101M16
 CEVW221M4
 CEVW221M4
 CKSQYB105K16

C3108, C3201-C3203, C3206, C3209
 C4561, C4562, C4565, C501, C503
 C5512
 C113 (2.2/10)
 C502 810/16)

CKSSYF104Z16
 CKSSYF104Z16
 CKSSYF104Z16
 DCG1040
 DCH1165

C5623
 C105, C1073, C1076, C121-C123
 C125, C133, C135, C152, C153
 C155, C165, C168, C178, C181
 C184, C4508, C4525, C4526

CKSQYB225K10
 CKSQYB475K6R3
 CKSQYB475K6R3
 CKSQYB475K6R3
 CKSQYB475K6R3

C1008, C1017, C107, C1075, C118
 C2210, C2217, C5727-C5729 (10/10)
 C1215 (150/4)

DCH1201
 DCH1201
 VCH1246

RESISTORS

C4548, C4549, C4552, C5725
 C157, C2221, C2222, C4551
 C109, C111
 C101, C102, C136
 C1009, C1015, C1018, C1021, C1024

CKSQYB475K6R3
 CKSRYB105K10
 CKSRYB334K10
 CKSRYB474K10
 CKSRYF105Z10

R501 (0.47/1/4W)
 R502 (0.68/1/4W)
 R3854
 R1411, R240, R3005, R3102, R3707
 R3801-R3806

DCN1160
 DCN1162
 RAB4CQ0R0J
 RAB4CQ103J
 RAB4CQ223J

C1044, C1047, C1052, C1055
 C1061, C1062, C1065, C1070, C1113
 C1202, C1204, C1208, C1221, C1223
 C1227, C1421, C1801, C1811

CKSRYF105Z10
 CKSRYF105Z10
 CKSRYF105Z10
 CKSRYF105Z10

R1245, R1246, R1255, R1256
 R1265, R1266, R1273, R1274
 R3810-R3813, R3824
 R254

RAB4CQ330J
 RAB4CQ330J
 RAB4CQ330J
 RAB4CQ473J

Number of times used	Number of responses
0	1
1	5
2	1
3	6
4	1
5	1
6	1
7	1
8	1
9	1
10	1

Mark No. Description**Part No.**

C137

CKSSYB182K50

C145, C146
C224, C230, C231
C108, C110, C139, C141, C1802
C3204
C114

CKSSYB222K50
CKSSYB223K16
CKSSYB331K50
CKSSYB331K50
CKSSYB332K50

C116
C232, C233
C148, C220, C223
C147, C1804, C1814, C532
C297, C3208, C3210

CKSSYB333K10
CKSSYB471K50
CKSSYB472K25
CKSSYB473K10
CKSSYB681K50

C138
C154, C236
C115
C1002, C1004, C1007, C1045, C1048
C1050, C1051, C1053, C1056, C1058

CKSSYB682K25
CKSSYB683K10
CKSSYB822K16
CKSSYF104Z16
CKSSYF104Z16

C1060, C1063, C1066, C1069, C1082
C1105, C1203, C1211-C1214, C1222
C1230, C1302, C1303, C1312, C1313
C1701-C1707, C2401-C2406, C3101
C3201-C3203, C3206, C3209

CKSSYF104Z16
CKSSYF104Z16
CKSSYF104Z16
CKSSYF104Z16
CKSSYF104Z16

C4561, C4562, C4565, C501, C503
C113 (2.2/10)
C502 (10/16)
C1008, C1017, C107, C1075, C118
C2210, C2217 (10/10)

CKSSYF104Z16
DCG1040
DCH1165
DCH1201
DCH1201

C1215 (150/4)

VCH1246

RESISTORS

R501 (0.47/1/4W)
R502 (0.68/1/4W)
R1411, R240, R3005, R3102, R3707
R3801-R3806
R1245, R1246, R1255, R1256

DCN1160
DCN1162
RAB4CQ103J
RAB4CQ223J
RAB4CQ330J

R1265, R1266, R1273, R1274
R3810-R3813, R3824
R254
R1241, R1242, R1248, R1249
R1261, R1262, R1268, R1269

RAB4CQ330J
RAB4CQ330J
RAB4CQ473J
RAB4CQ560J
RAB4CQ560J

R1281-R1283, R1287
R3208, R3223
R3207, R3226
R3209, R3224
R1001, R1002, R133, R2401

RAB4CQ560J
RN1/16SC56R0D
RN1/16SE1502D
RN1/16SE8201D
RS1/10S0R0J

R4513, R4514, R4520-R4524, R4527
R4591-R4593
R1302, R1303, R1312, R1313
R2502, R2505, R2508, R2511, R2514
R1301

RS1/10S0R0J
RS1/10S0R0J
RS1/16S1001F
RS1/16S2000F
RS1/16S4700F

R1052
R3505
R1054
R181
R510, R511
Other Resistors

RS1/16S6200F
RS1/16S75R0F
RS1/16S9100F
RS1/16SS4701F
RS1/4SA2R0J
RS1/16S###J

OTHERS

CN502 4P CONNECTOR
CN501 CONNECTOR
CN601 5P CONNECTOR
CN101 CONNECTOR

DKN1288
DKN1312
DKN1402
DKN1404

Mark No. Description**Part No.**

X201 (16.93MHz) OSC

DSS1152

CN1402 07P CONNECTOR
CN2401 KR CONNECTOR
CN2301 35P CONNECTOR
CN401 CONNECTOR
CN1401 CONNECTOR

RKN1048
S13B-PH-K
VKN1439
VKN2029
VKN2030

CN2601 CONNECTOR
CN3801 CONNECTOR
X1002 (27MHz) CRYSTAL
X1001 (24.576MHz) CRYSTAL

VKN2038
VKN2050
VSS1191
VSS1192

F USB ASSY (DVR-640H-S/DVR-543H-S Only)

COILS AND FILTERS

L105, L106 COIL
L101-L104 CHIP FERRITE BEAD

VTH1054
VTL1169

CAPACITORS

C102
C101

CEVW221M6R3
CKSRYF104Z25

RESISTORS

Other Resistors

RS1/16S###J

OTHERS

CN101 CONNECTOR
JA101 USB CONNECTOR
JA102 USB CONNECTOR

B10B-PH-K
VKB1226
VKB1227

G ATAB ASSY

RESISTORS

R13-R20

RAB4C0R0J

OTHERS

CN12 40P ATA CONECTOR
CN11 40P CONNECTOR

VKN1816
VKN1818

H POWER SUPPLY UNIT

POWER SUPPLY UNIT has no service part.

6. ADJUSTMENT

[Purpose]

If the combination of MAIN Assy and LOADER Assy is changed, the adjusted value for LD power will be shifted, and stable playback or recording of a disc will become impossible. Therefore, when the combination of MAIN Assy and LOADER Assy is changed, LD power adjustment and adjustment for disc judgment will be necessary.

Be sure to do this adjustment at following cases.

- When replacing MAIN Assy
- When replacing LOADER Assy

[Tools to be used]

- Special tool for adjusting the LD power (GGF1559)
- 10-pin FFC flexible cable (GGD1477)
- CD-ROM test disc: CDT-313 (GGV1054)
- DVD dual-layer test disc: DVDT-002 (GGV1036)

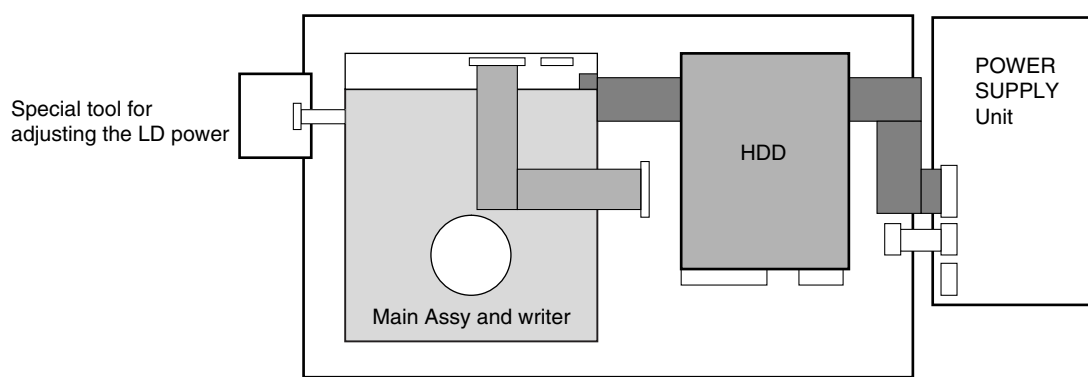
[Notes]

Never turn the power off while any of the following operations is in progress:

- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

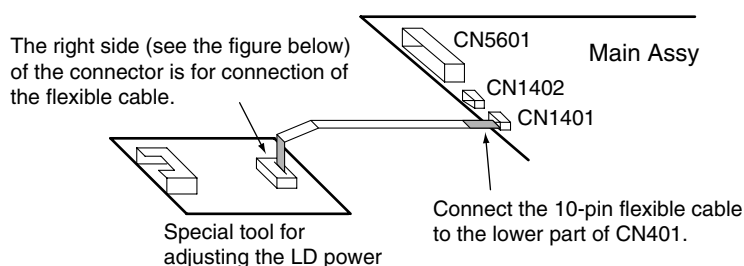
[Connections]

- Connections for adjusting the LD power

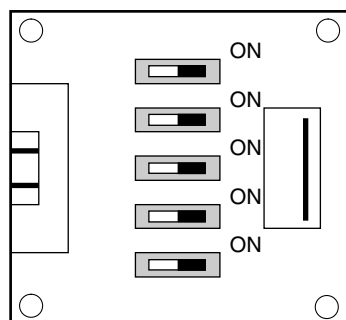


Note: Before adjusting the LD power, disconnect the power to the HDD and the flexible cable for ATA (40-pin).

- To which the special tool for adjusting the LD power is connected



- Setting of the switches on the special tool for adjusting the LD power



Set all five switches to ON.



[Procedures]

1. Connect the special tool for adjusting the LD power, as shown on the previous page.
2. Turn on the DVD recorder. ("POWER ON" will be indicated on the FL display.)
3. The tray opens.
Make sure that powered opening of the tray is working.
If the tray does not open under power:
 - a. Flexible cables or other cables may not be connected. (Connection of cables to the HDD is not necessary.)
 - b. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.
 - c. Failure in the loader, MAIN Assy, or POWER SUPPLY Unit is suspected.

- Make sure that the LED next to CN401 is lit.
If the LED flashes:
 - a. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.
4. Manually close the tray. Adjust the LD power.
Make sure that the LED next to CN401 is lit.
If the LED flashes three or four times in a burst:
 - a. The PU flexible cable may not be connected.
 - b. Failure in the Traverse Mechanism or MAIN Assy is suspected.

5. After adjusting the LD power, invoke powered opening of the tray.
Make sure that the LED next to CN401 flashes once per burst.
6. Load the DVDT-002 on the tray.
The tray automatically closes after 15 seconds.
The tray repeatedly closes and opens automatically until a disc is loaded.
7. After adjustment for judging the DVD disc, the tray automatically opens.
Make sure that the LED next to CN401 flashes twice in a burst.
If the LED flashes only once per burst:
 - a. A disc other than the DVDT-002 may be loaded. Be sure to load the DVDT-002.

8. Replace the DVDT-002 with the CDT-313.
The tray automatically closes after 15 seconds.
The tray repeatedly closes and opens automatically until a disc is loaded.
9. After adjustment for judging the CD disc, the tray automatically opens.
Make sure that the LED next to CN401 is unlit.
If the LED flashes twice in a burst:
 - a. A disc other than the CDT-313 may be loaded. Be sure to load the CDT-313.

10. Unload the CDT-313 and manually close the tray.
11. Turn off the recorder by holding the POWER button pressed for several seconds.
12. Disconnect the 10-pin FFC cable from the MAIN Assy.
13. Set the power sources for the HDD and the flexible connecting cable for ATA (40-pin) to their original statuses.

[Points to be confirmed]

1. Make sure that real-time recording on a DVD-R/-RW/RAM will finish normally.
2. Play back a recorded disc and make sure that playback is performed without a problem.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

◆ Jigs and Tools to be used

Remote control unit for serving (GGF1381)
 DVD Recorder Data Disc (Type 2)(*) (*) Be sure to use the latest disc (Type 2).
 Download disc In April, 2006, the latest disc is GGV1238.
 Test disc (GGV1025)
 DVD-RW (Commercial goods)

◆ Service Mode List

1. Setting type

Item	When to perform
7.1.1 Model setting	• When replacing MAIN ASSY or TUJB ASSY.
7.1.2 CPRM ID number and data	• When "CPRM ERROR" is displayed on the display screen. • After the MAIN ASSY or HDD replaced.
7.1.3 Firmware downloading method	• After model setting (After replacing MAIN ASSY, TUJB ASSY). • After the HDD is replaced. • When NG is displayed for the version information in Service mode.
7.1.4 Video Adjustment for Specific Area	• When a flicker appears on the tuner display like a horizontal or vertical out-of-sync symptom
7.1.5 (4) OSD Filter Setting	• When a character flicker appears on the OSD depending on the monitor.

2. Diagnosis type

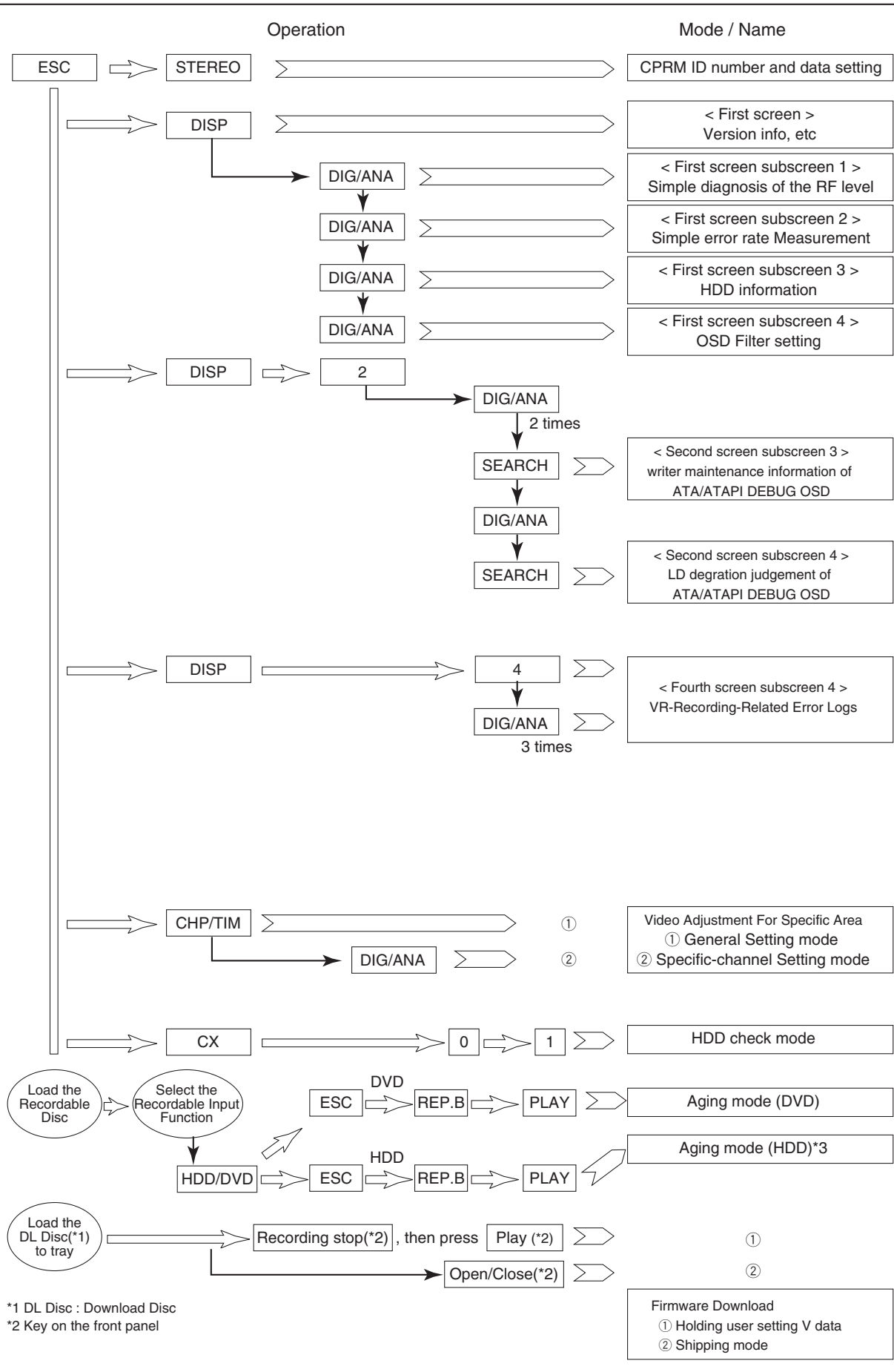
7.1.5 Service Mode First screen : Version, Simple diagnosis of the RF level, Simple error rate measurement, HDD information. Second screen : ATA/ATAPI debug screen, LD degradation judgement Fourth screen : VR-recording-related error loss	• When confirming version information • When confirming the state of DRIVE Assy.
7.1.6 Aging Mode	When a claimed symptom is difficult to reproduce.
7.1.7 HDD Check Mode	When checking the quality of HDD.

◆ Necessary procedure List when replacing Assys

Following is the surely necessary procedures and the product state after changing when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY TUJB ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmware download	×	○
HDD	1. CPRM setting 2. Firmware download	○	×

SERVICE MODE MAP



7.1.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

- ① After power on, the following screen is displayed on TV monitor. Press four digits properly (for example "0205") by using the remote control unit for service, according to the screen information.
- ② Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.
- ③ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.
- ④ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example "DVR-540H/KUC").
- ⑤ End

[Recorder's Model Setting]

Input the number using the remote for Service.

> ---

Input No.	Model
[0205]	DVR-540H/KUC]
[0305]	DVR-640H/KUC]
[0405]	DVR-543H/KUC]

```

DVR-540H/KUC    VERSION : 1.**
SYSCON  : RELEASE_100
Rev      : 1.1000
TUNERCON : 198.000      OK
DRIVE    : DVD-RW DVR-L11X  OK
          1.00          OK
HDD       : WDC WD800BB-xxJKCxx  80

DEVICE    : E2R-FE 1.2    FLASH : 64M
REGION    : 1            C : *****
    
```

7.1.2 CPRM ID NUMBER AND DATA SETTING

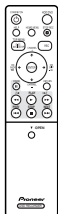
[Purposes]

For the DVD recorder, it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

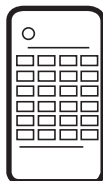
The Input is Necessary When:

- "CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

[Tools to be used]



Remote control unit supplied
with the unit (VXX3095)



Remote control unit for servicing
(GGF1381)



DVD Recorder Data Disc (Type 2)

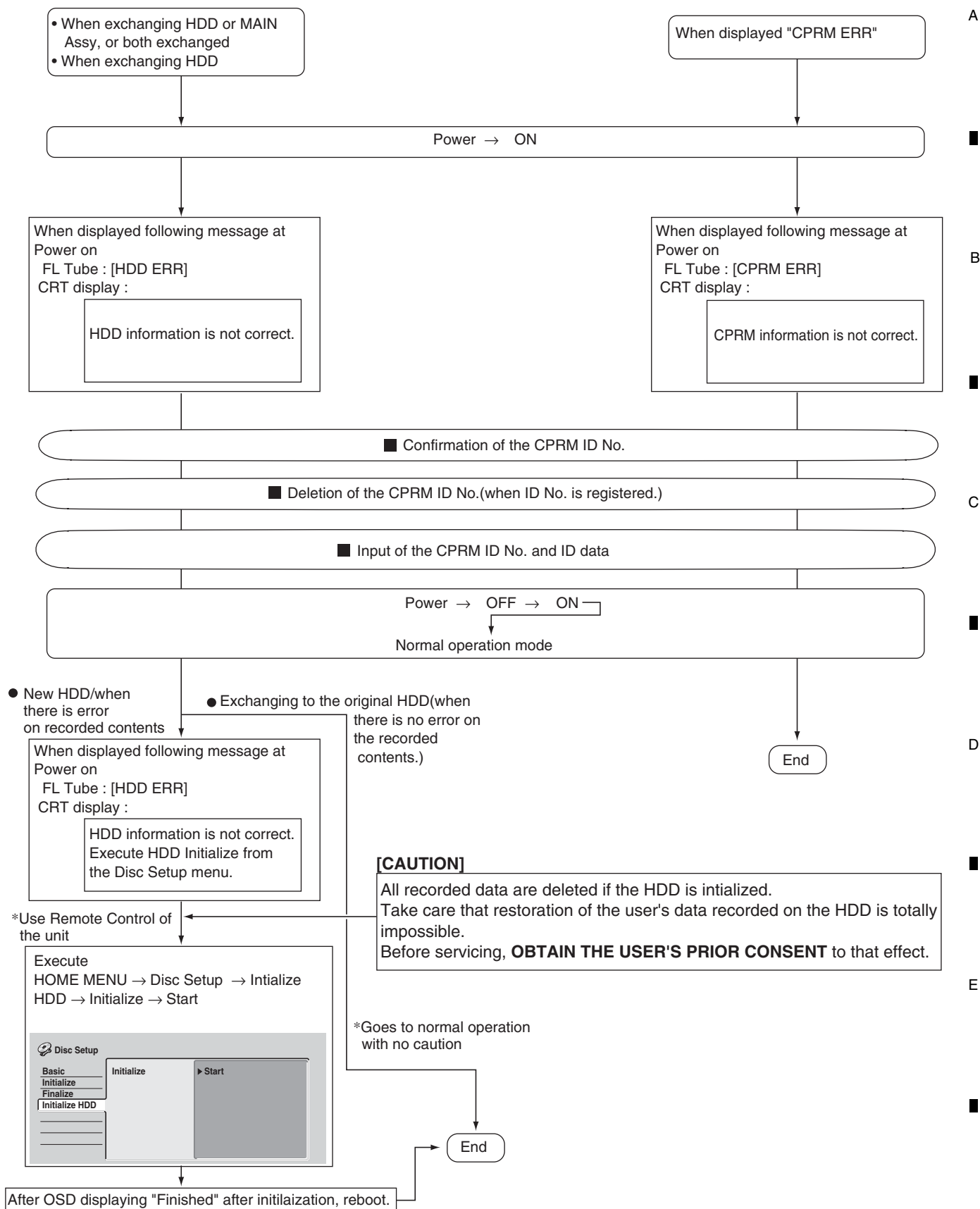
Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

Input Flow of the ID No. and ID data when exchanging HDD or MAIN Assy



How to Input the ID Number and ID Data

① To enter the input mode, press **[ESC]**+**[STEREO]** keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.



② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)

[Recorder's ID Number Setting]
ID Number ?
> -----
<CLEAR> Exit

Input ID Number !



③ After inputting the number, press **[SEARCH]** keys to register the ID number.

[Recorder's ID Number Setting]
ID Number ?
> 0 0 0 0 0 0 0 1 OK ?
<PLAY> Compare Mode
③ → <SEARCH> Enter

Input ID Number !



④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/▲" on the player.

[Recorder's ID Data Setting]

<CLEAR> Exit
④ → Insert The ID Data Disc !



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

[Recorder's ID Data Setting]

⑤ → Loading The ID Data Disc !



⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")

[Recorder's ID Data Setting]

⑥ → Wait Rom Writing !



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press **[CLEAR]** key to exit the input mode.

[Recorder's ID Data Setting]

⑦ → Rom Write OK !
⑧ → <CLEAR> Exit

[How to Confirm the ID Number]

- ① Press **[ESC]**+**[STEREO]** keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.
- ② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.
- ③ To exit this mode, press **[CLEAR]** key.

② → [Recorder's ID Number Setting]
ID Number ?
[0 0 0 0 0 0 0 1]
Compare
> * * * * *
③ → <CLEAR> Exit
<STEREO> ID Data Setting Mode
Input ID Number !

[How to Clear the ID Number]

- ① Press **[ESC]**+**[STEREO]** keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.
- ② Input the same number as the ID number you have set.

② → [Recorder's ID Number Setting]
ID Number ?
[0 0 0 0 0 0 0 1]
Compare
> * * * * *
<CLEAR> Exit
<STEREO> ID Data Setting Mode
Input ID Number !

- ③ After inputting the number, press **[STOP]** key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(**[STOP]** key is not accepted until 9 digits are entered.)

③ → [Recorder's ID Number Setting]
ID Number ?
[0 0 0 0 0 0 0 1]
Compare
> 0 0 0 0 0 0 0 1 OK ?
<PLAY> Enter
③ → <STOP> Memory Clear
<STEREO> ID Data Setting Mode
Input ID Number !

7.1.3 FIRMWARE DOWNLOADING METHOD

[Purposes]

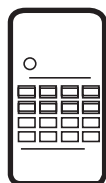
1. When the main board is replaced, the firmware versions for the system control computer, drive and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
To match the versions for the above four, firmware downloading is necessary in the following two cases:
 - ① After the model setting
 - ② When NG is displayed on the first screen (version information, etc.) of Service mode
 - ③ After changing MAIN Assy or TUJB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for downloading: disc download and serial download

1. DISC DOWNLOAD

[Tools to be used]



Remote control unit
for servicing
(GGF1381)



Download DISC

[Notes]

Be sure NOT to turn off the unit during downloading.
If the unit is turned off during downloading, the SYSCON, TUNERCON and DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

- [Procedure]**
- ① Open a disc tray by pressing the "OPEN/CLOSE" button.
 - ② Put the download disc on the tray. Press a "Record Stop" button while pressing a "PLAY" button on the frontpanel.
 - * The disc tray closes automatically and the disc is loaded.
 - * The disc tray opens automatically after loading.

FL display

LOAD

DISC DWLD

- ③ Take out the Download Disc.

DOWNLOAD - 2

DOWNLOAD - 3

DOWNLOAD - 4

Countdown directly after
displayed "DOWNLOAD-4."

DOWNLO***

"***" is counted from 975.

- * After download is completed, the power turns off, and turns on and a disc tray closes automatically.
- * It takes for about 7-8 minutes until download is completed.

- ④ Press and hold a " ESC " button, then press " DISP " button on the remote control unit for servicing.
- ⑤ Confirm a firmware release version.
- ⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

A

[Tips]

- (1) If the power is not correctly turned on or when the power is shut off during downloading, proceed as follows before performing download again:
 - In a case where downloading was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
The SYSCON program will not function correctly.
If the program cannot be downloaded from the disc or through serial communication, replace the MAIN ASSY.
 - In a case where downloading was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
The DRIVE program will not function correctly.
If the program cannot be downloaded from the disc or through serial communication, replace the MAIN Assy.
 - In a case where downloading was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display:
The program for the tuner microcomputer will not function correctly.
If the program cannot be downloaded from the disc, replace the TUNERCON microcomputer (IC101 : TUJB ASSY).
- (2) The setting way to shipping mode (Reference)
At ② lines of the [Procedures], press "OPEN/CLOSE" button while pressing REC STOP button.

B

C

D

E

F

2. SERIAL DOWNLOAD

[Purposes]

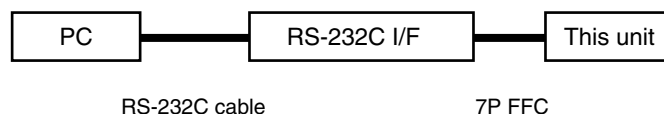
1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized. In such a case, the versions for the above three must be matched.
2. This method is used when disc downloading fails.

[Tools to be used]

- * PC with serial port
- * RS-232C straight cable
- * RS-232C I/F jig (GGF1348)
- * 7P FFC (VDA1681)
- * Download program (UFU.exe)
- * Firmware

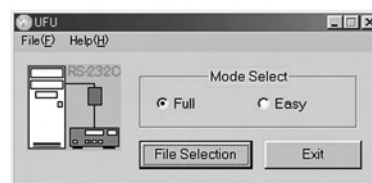
[Connection]

Connect as follows:



[Procedures]

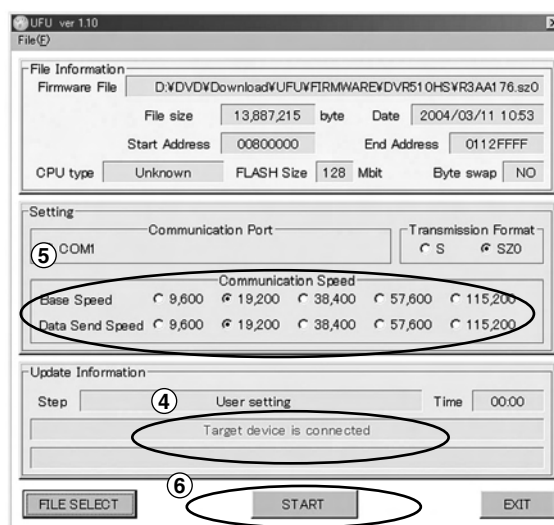
- ① Connect the 232C I/F jigs above way.
- ② Turn on the PC and start the "UFU.exe".
- ③ Select the Firmware file. ("sz0" file)
- ④ Turn the DVD recorder on and start the download program.
"Target Device is connected" is appeared on the screen.



- ⑤ Select the Communication Speed (Baud Rate)
 - a) Base Speed 115,200
 - b) Data Send Speed 115,200

- ⑥ START
 - Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and download may fail. In this case, please click "START" again.
 - Other factors can be considered if download fails 3 times or more.
 - And it takes about 20 minutes for updating the firmware.

* TUNERCON program is not downloaded this way, so do disc-download for TUNERCON.

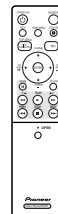


7.1.4 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]



Remote control unit supplied with the unit (VXX3095)



Remote control unit for servicing (GGF1381)

1. Specific-Channel Setting mode

In this mode, specific settings can be made for up to 12 channels.

For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

- ① Select a channel or line input (L1-L3) on which a specific setting is to be made.
- ② Press the **[ESC]** then **[CHP/TIM]** keys on the remote control unit for servicing. "General Setting mode" is displayed.
- ③ Press the **[DIG/ANA]** key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit]

Press the **[ESC]** key on the remote control unit for servicing to return the Normal mode.

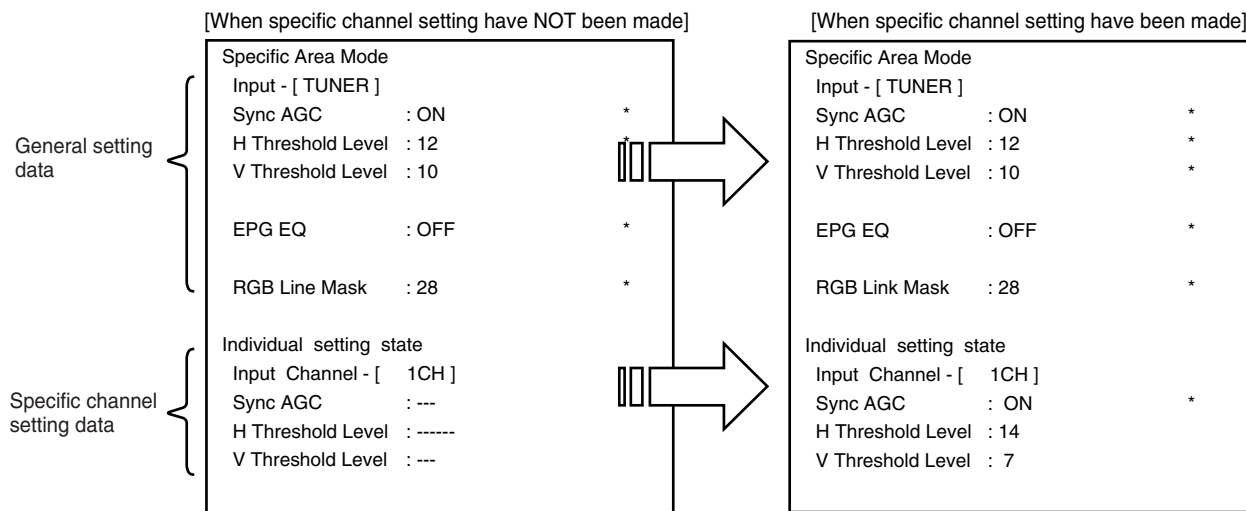
[Note]

Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.

For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."



[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

Specific Area Mode

Input - [TUNER]

Sync AGC : ON *

H Threshold Level : 12 *

V Threshold Level : 10 *

EPG EQ : OFF *

RGB Line Mask : 28 *

Individual setting state

Sorry !

You can store only 12 channels
for Specific Area mode.**[H Threshold Level]**

The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]

The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]

The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

2. General Setting mode**[How to enter this mode]**

- To shift from Specific-Channel Setting mode:
Each time the **[DIG/ANA]** key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.
- To shift from Normal mode (recording/playback stop):
Press the **[ESC]** then **[CHP/TIM]** keys.

[How to exit] Press the **[ESC]** key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.

Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]**Specific Area Mode**

Input - [TUNER]

Sync AGC : ON *

H ThresholdLevel : 12 *

V Threshold Level : 10 *

EPG EQ : OFF *

RGB Line Mask : 28 *

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

Specific Area Mode

Input - [TUNER]

Sync AGC : ON *

H ThresholdLevel : 12 *

V Threshold Level : 10 *

EPG EQ : OFF *

RGB Line Mask : 28 *

This channel is set up
individually.

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)
Key operations in Specific Area Setting mode of the remote control units are shown in the table below
(the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	—	—	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	—	—	○	○
[SIDE A], [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev x3], [x3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev x3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [x3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[<< STILL STEP], [STILL STEP >>]	Sets Line Mask setting at RGB signal is inputted.	22 - 40 (Default: 28)	[<< STILL STEP] : Decreasing 1 by 1 in the range 22 to 40. (Cyclic operation) [STILL STEP >>] : Increasing 1 by 1 in the range 22 to 40. (Cyclic operation)	X	○
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	—	The General Setting data will not be changed.	○	X
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	—	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	—	The General Setting data will not be changed (will be retained).	○	X
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	—	—	○	○

Notes:

- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

Overview and purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs

Each screen has sublevel screens.

[Note]

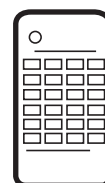
After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

1. Version information, etc. (First screen)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measurement, HDD information, and OSD Filter setting

[Tools to be used]



Remote control unit for servicing
(GGF1381)



Aluminum-coated test disc
(GGV1025)

[How to enter] While the GUI screen is not displayed, press the **[ESC]** then **[DISP]** keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the **[DIG/ANA]** key repeatedly until your desired subscreen is displayed. The subscreens change

[How to quit] Press the **[ESC]** key.

[Description]

(1) First screen

① DVR-540H/KUC ② VERSION : 1.**
 ③ SYSCON : RELEASE_100
 Rev : 1.1000
 ④ TUNERCON : 198.000 OK
 ⑤ DRIVE : DVD-RW DVR-L11X OK
 1.00 OK
 ⑥ HDD : WDC WD800BB-xxJkCxx 80
 ⑦ DEVICE : E2R-FE ⑧ FLASH : 64M
 ⑨ REGION : 1 ⑩ C : *****

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the TUNER microcomputer is older.
 Measures to be taken:
 • Download the firmware.

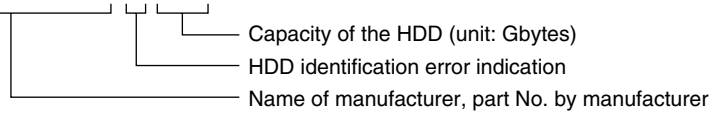
OK : The appropriate drive is mounted.
NG- : An inappropriate drive is mounted.
 Measures to be taken: Download the firmware.

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the drive microcomputer is older.
 Measures to be taken: Download the firmware.

- ① Model name/destination
- ② Version of the recorder software
- ③ Revision No. of the system-control computer software
- ④ Version No. of the tuner microcomputer
- ⑤ Information on the built-in drive
(Model name, version No., model type)
- ⑥ Data of the built-in HDD, capacity of the HDD
- ⑦ DEVICE information (EMMA type, ES No.)
- ⑧ FLASH ROM information
- ⑨ Region No.
- ⑩ CPRM information (CPRM key No.)

• Details on HDD data are described below:

HDD : WDC10234564 # 160



If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	- Check the connection to the ATA connector. - Replace the ATA flexible cable and connector. - Replace the HDD. - Replace the resistor in the ATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. - Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

(2) Simple diagnosis of the RF level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the **[ESC]**, **[DISP]**, then **[DIG/ANA]** keys, in that order.

[How to quit] Press the **[ESC]** key.

[Description]

```

DVR-540H/KUC      VERSION : 1.**
SYSCON  : RELEASE_***
              Rev   :1.*****
TUNERCON : 198.000      OK
DRIVE    : DVD-RW DVR-L11X  OK
              1.00        OK

HDD  : WDC WD800BB-xxJKCx  80

DEVICE : E2R-FE  FLASH : 64M
REGION : 1      C : * * * * *

Input CH : ** ch      ← Input channel
Freq Diff : Low 1     ← Input frequency difference
AGC Volt  : *** mV    ← AGC voltage
  
```

Subscreen 1

1) Frequency Difference (Freg Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
High	High
Just Tune	Center
Low	Low 1
	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC VOL
Intense field area (Clear image)	70 dB μ or more	3300 mV or less
Less intense field area (Noise may be generated.)	60 dB μ or more 70 dB μ or less	3300 - 4600mV
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	60 dB μ or less	4600 mV or more

Tips:

For good reception, the field intensity must be 60 dB μ or more (AGC Volt 4600 mV or less).
For accurate measurement, use a field intensity meter.

(3) Simple Error Rate Measurement (Subscreen 2)

- [How to enter]**
- While the User Operation screen is displayed, press the **[ESC]** then **[DISP]** keys, then the **[DIG/ANA]** key twice, in that order.
 - While subscreen 1 of the first screen is displayed, press the **[DIG/ANA]** key.

[How to quit] Press the **[ESC]** key.

[Measurement procedures]

- Display subscreen 2.
- Load the Test disc (GGV1025).
- Judge the results of the error rate measurement by referring to Table 1 on page 89.

ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

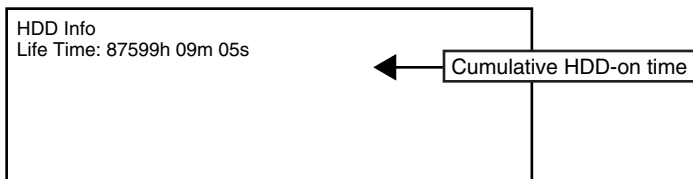
Table 1: Thresholds when determining OK or Error

Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	—	—	8.0×10^{-4}
DVD-R	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}
DVD-RW	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}

(4) HDD information (Subscreen 3)

- [How to enter]**
- While the User Operation screen is displayed, press the **[ESC]** then **[DISP]** keys, then the **[DIG/ANA]** key three times, in that order.
 - While subscreen 2 of the first screen is displayed, press the **[DIG/ANA]** key.

[How to quit] Press the **[ESC]** key.

[Mode description]

Subscreen 3

[Tips]

- How the data on cumulative HDD-on time are processed in memory**

Storage place:
FLASH ROM

Timing of referring to the data on cumulative HDD-on time:
When the power is turned on, fails, the FLASH ROM is referred to.

Timing of updating the data on cumulative HDD-on time:
While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- How to clear the data on cumulative HDD-on time**

FLASH ROM:

When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the **[ESC]** then the **[STEREO]** keys).

Notes:

- The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
- The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

(5) OSD FILTER SETTING (SUB screen 4)

[Purpose]

Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as charavter flicker, appears on the monitor, select the filter response.

[Tools to be used]



Remote control unit for servicing
(GGF1381)

[How to enter]

- While the User Operation screen is displayed, press the **ESC** then **DISP** keys, then the **DIG/ANA** key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the **DIG/ANA** key.

[How to quit]

Press the **ESC** key.

[Setting procedures]

- Display subscreen 4.
- Select the setting from the key operation table.

OSD Filter Setting

OSD FILTER : 4

Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.

Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit is turned on the next time.

Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	—	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	—	—

2. ATA/ATAPI Debug Screen (Second screen)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]



Remote control unit for servicing
(GGF1381)



Aluminum-coated test disc
(GGV1025)

[How to enter]

- While the User Operation display is displayed, press the **[ESC]**, **[DISP]**, then **[2]** keys, in that order.
- While any subscreen of the second screen is displayed, press the **[DIG/ANA]** key repeatedly. The subscreens change cyclically.

[How to quit] Press the **[ESC]** key.

(1) Writer maintenance information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter] • While the User Operation screen is displayed, press the **[ESC]**, **[DISP]** then **[2]** keys, then the **[DIG/ANA]** key twice, in that order.

[How to quit] Press the **[ESC]** key.

[Procedures] Update the display by pressing the **[SEARCH]** key while subscreen 3 is displayed.

ATA/ATAPI Writer Maintenance Info		Error log for the Writer (Not for Service)	
① Power ON	00 00 00 0000 00000000	①	Power-on time/cumulative power-on time
0102:56	01 00 00 0000 00000000	②	Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
DVD	02 00 00 0000 00000000	③	Duration of emission of the LD for DVD-W/DVD while writing
② R0053:48	03 00 00 0000 00000000	④	Duration of emission of the LD for CD-R/CD while reading
③ W0022:16	04 00 00 0000 00000000	⑤	Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)
CD	05 00 00 0000 00000000		
④ R0034:04	06 00 00 0000 00000000		
⑤ W0000:00	07 00 00 0000 00000000		
	00-00		

- ② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours

The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the **SEARCH** key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.

[Note on lighting time data for each LD]

Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

(2) LD degradation judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter] • While the User Operation screen is displayed, press the **[ESC]**, **[DISP]** then **[2]** keys, then the **[DIG/ANA]** key three times, in that order.

[How to quit] Press the **[ESC]** key.

[Notes]

- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25°C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the **[SEARCH]** key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

ATA / ATAPI - LD Degrade			
①	CD	: 0070 104 %	OK
②	DVD	: 0068 96 %	OK
③	TMP	: 00A3 41 °C	
④	ADJ	: 0067 26 °C	
⑤	RF	: 3D70	
⑥	TLT	: FFD5	

Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is displayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs and DVDs are both NG, replace the drive.

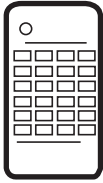
3. VR-Recording-Related Error Logs (Fourth screen)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]



Remote control unit for servicing (GGF1381)

[How to enter]

- While the User Operation display is displayed, press the **[ESC]**, **[DISP]**, then **[4]** keys, in that order.
- While any subscreen of the fourth screen is displayed, press the **[DIG/ANA]** key repeatedly.
The subscreens change cyclically.

[How to quit] Press the **[ESC]** key.

[Description of each subscreen]

(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err.," as shown below.
For details on errors, see "Table 1: Description of VR-recording-related errors."

RunFnc : --- Ecl : **** Rate : **

← Recording-related errors are displayed.

(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)

① Recording Error History Display

01-06-01 20:05:30 No SysHdr IN

01-06-02 00:22:10 Write Error

① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the **[SPEED+]** or **[SPEED-]** key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 11 (These subscreens are not for service use.)

Table 1: Description of VR-recording-related errors

Any error message marked with * is displayed "RecErr : -----" on the Subscreen 1 of the fourth screen.

● Error related to MPEG Encoder

Error Message	Description
AVEnc Hang	AVEncoder failed
IN Encode *	Changes cannot be made in the process of encoding
No SysHdr IN	System packet is not input periodically
Stm Start NG	Failure to start encoding (reasons not clear)
Stream NG	Inappropriate input stream data
Strm Start NG	Timeout waiting for system packet input at the beginning

● Error related to Drive system

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description
Bdr Cls NG	Close Border failed
Bdr Opn NG	Open Border failed
BUF Overflow	Overflow of the Stream Buffer
CLS Rzon Fail	Video Mode Close Rzone failure
Drive Hang	The Drive is hung up.
Drv Err	General error of the drive
Drv Hard Err	Abnormality in the drive hardware or firmware
Drv TimeOut	Timeout waiting for drive operation
Fail Repair	Repair failed
Format NG	Format failed
May Be V mode	Although TMP_VMG1 is not written, it may be Video Mode disc.
Mech No Res	No response from the mechanical-control computer
MKB Invalid	MKB reading error
NWA Exhaust	NWA surpassed and impossible to use
OPC NG	OPC failed
PCA Full	PCA has been used up.
Read Err	Reading failed, ECC failed, etc.
ReadOnly DISC *	Because some data are invalid, data cannot be written
RMA Full	RMA has been used up.
Rzn Cls NG	Close RZone failed
Rzn Rpr NG	Repair RZone failed
Rzn Rsv NG	Reserve RZone failed
TMP-VMG WrErr	Video Mode TMP VMGI Write Error
VTSI_B Wr Err	Video Mode VTSI BUP Write Error
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)
VTSI Wr Err	Video Mode VTSI Write Error
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)
Write Err	The Drive failed to write and could not be recovered.
May Be PVR	May be +VR disc, but no RSAT
V Final fail	Abnormal process occurred when finalizing Video mode
DLVR trace NG	Close Rzone failed at dual layer disc

RSAT : Reserved Space Allocation Table

● Error related to Dubbing

Error Message	Description
H2D CP SomeNG	Other NG HDD →DVD copy
Mem get NG	Video Mode Copy Memory has not ensured.
Strm TransfNG	Video Mode Copy Stream Transfer NG
Tracon Trn NG	Video Mode Copy Tracon tranfer has not been completed.
VC Cell Max	Maximum number for Video Mode copy Cells exceeded
VC CopyCancel	Video Mode Copy Copy Cancel
VC FlushC NG	Video Mode Copy Flush Cache NG
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed
VC HDD Inf NG	No information on Video Mode Copy HDD
VC HDD Info NG	Format failed
VC Idling NG	Video Mode Copy idling NG
VC Pck Anl NG	Analyzing Video Mode Copy Pack failed

● Error related to Dubbing (continued)

Error Message	Description
VC Transf Stp	Video Mode Copy Transfer Stop
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.
VC VOBUsizE	Video Mode Copy VOBUsiz NG
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed
V2H APP FL NG	VR → HDD APP FLG is OFF
V2H Aud Ch NG	VR →HDD Audio Channel NG
V2H Aud Md NG	VR →HDD Audio Mode NG
V2H Aud Strm N	VR →HDD Audio Stream number NG
V2H SRC Prot	VR →HDD copy prohibited material
V2H Unknown	VR →HDD other NG
V2H VOBUsizE	VR →HDD Play back time of each VOBUsiz is different
V2H V Reso NG	VR →HDD Video resolution NG
H2D CP NoSpac	HDD →DVD insufficient free space for copy
H2D TO HDDRD	HDD →DVD (VR) TimeOut at HDD playing side
H2D TO SPRO	HDD →DVD (VR) TimeOut at internal processing
H2D TO DVDWR	HDD →DVD (VR) TimeOut at HDD recording side

● Other Errors

Error Message	Description
Abort *	Cancellation
Already open	Extension file is already opened.
BK BATT Down	Backup RAM data has been erased.
BK FSYS Dirty	Backup RAM data has not been wrtten on the File Sys.
BUG	Some bugs
BusReset Done	Bus Reset has been excecuted.
Cell Close NG	Cell Close NG
CPRM IC NG	Inappropriate CPRM IC
Dir Depth Err	Tree of Directory is too deep.
Disc Full	No further data can be written because the disc is full.
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure
DRAM NG	Abnormality in access to the Work DRAM
Drive Destroy	The drive has crashed.
EncModul Hang	Encoder routine is hung up.
F Alrdy Exst	Extension file is already exist.
File cancel	Extension file is canceled.
FileNot Exist	Extension file is not exist.
Format Excec	Formatting has been executed.
Invalid Disc *	The disc cannot be recognized.
Invalid Param *	Invalid parameter
Invalid TMVMG	Invalid TMP_VMG content
Invalid UDF *	Invalid UDF content
Invalid VMG *	Invalid VMG content
Invalid VTSl	VTSl information of +VR is unusual.
Irr Action *	Incorrect action
MKB REVOKED	Error in gaining data
Limit Over *	Standard maximum limit exceeded
No More Info *	No more space in the internal work-management area
No Permission *	No permission to write to the disc
No Video	No video input (not locked)
Now Busy *	In the process of the emergency processing
NV Pck DMA Er	Inappropriate NaviPack DMA
NV Pck MK Err	Error in creating NaviPack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input
Over Heat	Abnormal temperatute
PARAM NO ACCP	Recording parameter is not matched.
Process Over	Process is overfull.
Protect Src *	Source to be recorded is copy-protected.
Rec Pause *	No operation permitted during recording pause
Relocation Do	VR-recording data was relocated

● Other Errors (continued)

Error Message	Description
Repair Excec	Repairing has been executed.
Something *	Undetermined error
SRAM NG	Abnormality in access to the backup work SRAM
Status NG *	Abnormality in change of statuses
SW PVR	Switch to +VR playback process
SW Vpb mode *	Switching to video playback routine is required.
SW Vrec mode *	Switching to video recording routine is required.
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp
VBR-SRAM NG	Abnormality in VBR SRAM
V Categ ID NG	Inappropriate Category ID
V Cate Inf NG	Inappropriate Category information
V Ext MAX Ovr	Count Max exceeded
V ExtToo Big	The extension file is too large.
V Ext TY NG	Type NG
Virgin DISC	Virgin Disc
VOBU Info NG	Inappropriate VOB information
WaterMark Det	Watermark detected
WM Cracked	WM Cracked
Param Short	Editting Error (Clear A-B)
Invalid VRMI	Information of +VR is NG. (VRMI)

● Error related to HDD

Error Message	Description
Do nothing	Do nothing for demand.
ESFSYS CORUPT	easyfsys error
ESFSYS INIT	easyfsys initializing
HDD Buff High	High-level process executed for the HDD Buffer
HDD DEF DONE	HDD deflag finished
HDD DEF ERR	HDD deflag error
HDD Destroy	HDD is not recognized on the bus.
HDD INFO BAD	Incorrect HDD Management Data
HDD Initialize	HDD initialized
HDD IRRG POFF	Abnormal power off
HDD MBR NG	Inconsistent MBR data
HDDReset Done	HDD Reset executed
HDD ROMSUM NG	Rom-code check sum NG
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD SMART NG	Inappropriate HDD SMART
HDD Trans Err	DMA error in HDD copy transfer
HDD unauthor	Inconsistent HDD serial No.
HDD Zero WR	MBR was written
Task No Activ	Task has not been activated.
TT Rec Over	Title recording time full
HDD WRONG TGT	Invalid HDD target No. is directed.
extHDD Ignore	External HDD is dismounted.
HDD PFile NG	Program file installed in HDD is NG.
HDD DEL TT	Delete the title by HDD recovery.
HDD DEL PL	Delete the dubbing list by HDD recovery.
HDD DEL OC TT	Delete the title moving on the way inside HDD

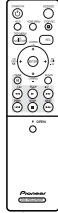
● No Error

Error Message	Description
Non Err *	Normal

Abbreviations:

ECC = 4 byte Code for Error Correction
 UDF = Universal Disc Format
 PCA = Power Calibration Area
 OPC = Optical Power Control
 NWA = Next Writable Address

VMG = Video Manager
 RMA = Recording Management Area
 MKB = Media Key Block
 TMP_VMGi = Temporary Video Manager Information
 Border = from Lead-in to Lead-out

[Purposes] If symptoms regarding recording/playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.	[Tools to be used]    Remote control unit for servicing (GGF1381) Remote control unit supplied with the unit (VXX3095) Commercially available, recordable DVD-R/+R and DVD-RW/+RW/-RAM discs				
[Notes]	• When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased. • Commands from the remote control unit are accepted during Aging mode. • If Aging mode is quit using the ESC key, indications on the FL display will return to normal display. • Cancel timer settings before entering Aging mode. • Set the recording rate beforehand. It cannot be changed during Aging mode.				
[How to enter]	① Press the [DVD] key to switch to DVD. ② Load a recordable disc. ③ Select the input function of a recordable source. ④ After disc detection is performed, press the [ESC] then [REP.B], and then [PLAY] keys on the remote control unit for servicing to enter Aging mode.				
[How to quit]	Press the [ESC] key on the remote control unit for servicing to quit Aging mode and return to Normal mode. Notes: • If during recording: Recording is stopped. • If during playback: Playback is paused. • If during initialization: The unit stops after initialization is finished. • If the tray is being opened/closed: The unit stops after the tray is opened/closed. (aging for $\pm$RW/-RAM only)				
[Description of operation] Aging for the DVD-RW/DVD-R <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Aging for the DVD-RW/+RW/-RAM</th><th style="width: 50%; text-align: center;">Aging for the DVD-R/+R</th></tr> </thead> <tbody> <tr> <td style="vertical-align: top; padding: 5px;"> During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Setting of the main unit--Recording--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD. </td><td style="vertical-align: top; padding: 5px;"> During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. Note: A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD. Note: Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging. </td></tr> </tbody> </table>		Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Setting of the main unit--Recording--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. Note: A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD. Note: Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.
Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R				
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Setting of the main unit--Recording--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. Note: A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. Note: Indications on the FL display are retained, and this information is also retained as an OSD. Note: Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.				

[Aging for the HDD]**[How to enter]**

- ① Press the **[HDD]** key to switch to HDD.
- ② Press the **[ESC]** key then the **[REP.B]**, and then the **[PLAY]** keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the **[ESC]** key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.

- ① Erasure of all the memory data from the HDD
 - ② Recording for 60 minutes
 - ③ Playback for 60 minutes
- * Take caution as all recorded data of the HDD is deleted.*

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.

[AGING 0001]

If an error is generated, the aging operation stops.

Note:

Indications on the FL display are retained, and this information is also retained as an OSD.

How to diagnose failure of the hard disc drive (HDD)

Purpose:

With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:

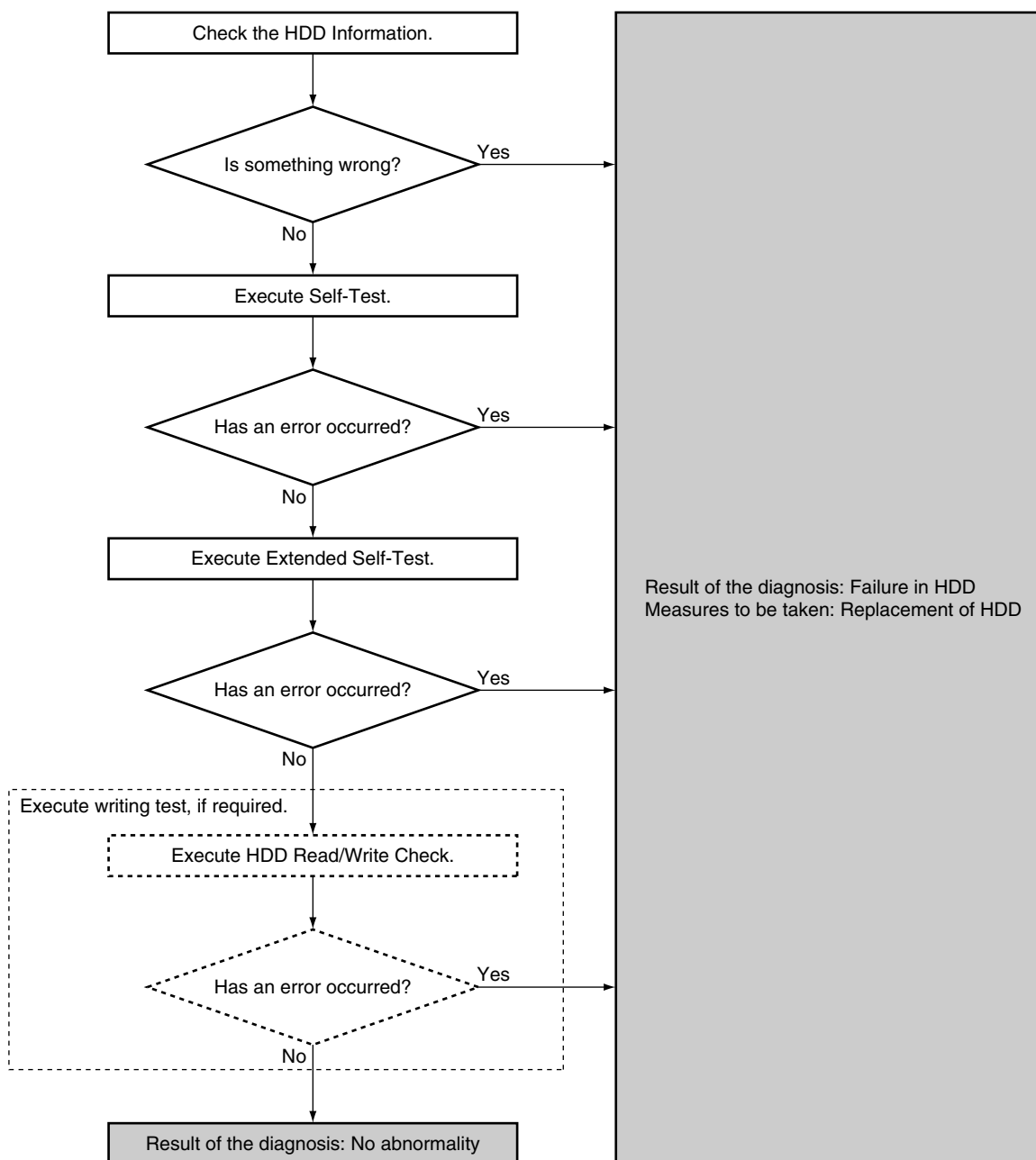
- (1) HDD Error
- (2) Failure in HDD recording or playback
- (3) HDD not recognized

Tool to be used:

Remote control unit for servicing (GGF1381)

1. Flow of HDD diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information

This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.

SELF TEST

This is a simplified diagnosis for the HDD.
A serious failure in the HDD can be detected with this test.
Time required for testing: Approx. 60 sec.

EXTENDED SELF TEST

This is a reading test across all sectors of the HDD.
Data recorded on the HDD will not be erased, because no writing operation is performed.
Time required for testing: Approx. 2 hours/160 GB
1 hours/80 GB

HDD Read / Write Check

This is a writing, reading, and comparing test across all sectors of the HDD.
All data recorded on the HDD will be erased, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.**
Time required for testing: Approx. 6.4 hours/160 GB
3.2 hours/80 GB

2. How to start or terminate the diagnostic program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

How to terminate: Press the "ESC" key.

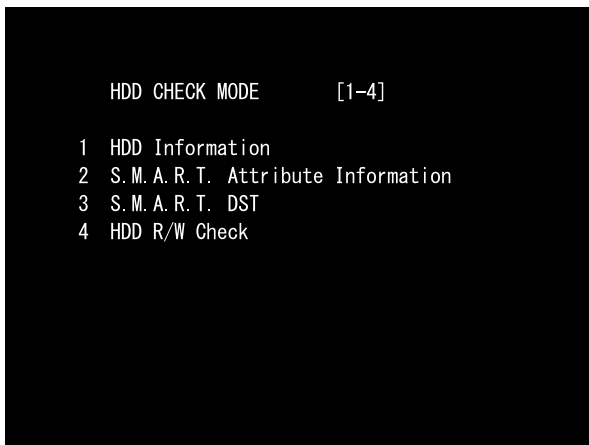
Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

3. Diagnosis procedures

① Display the menu on the screen.

The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"- "4" on the remote control unit for servicing.



Tests to be executed

- ① HDD Information:
Check of the HDD information
- ② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
- ③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

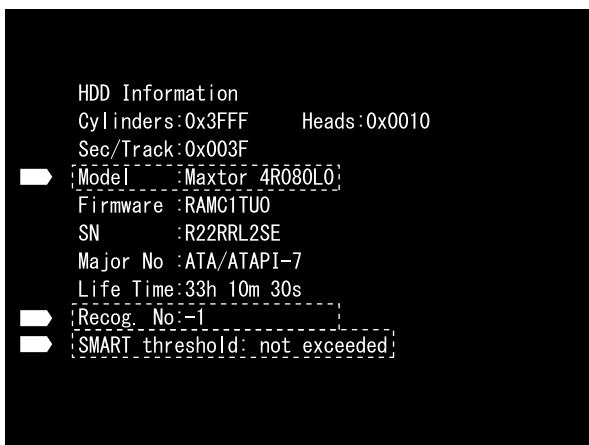
② Check the HDD information.

Press the "1" key on the remote control unit for servicing. Check the following data:

Model: Is the correct model name of the HDD displayed?

Recog. No: Is a positive value displayed?

SMART threshold: Is "not exceeded" displayed?



Detailed description

- ① Model:
For the correct model name, refer to the display of the unit.
- ② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
- ③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

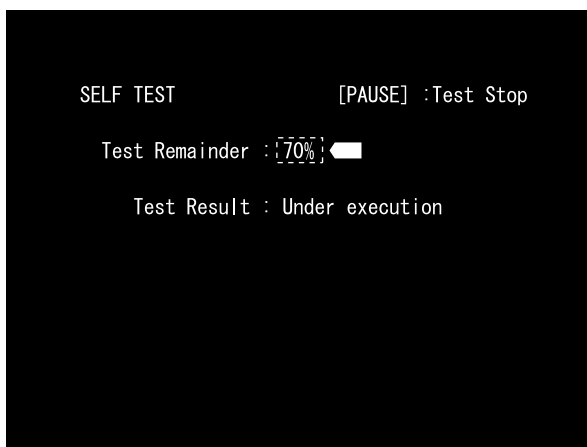
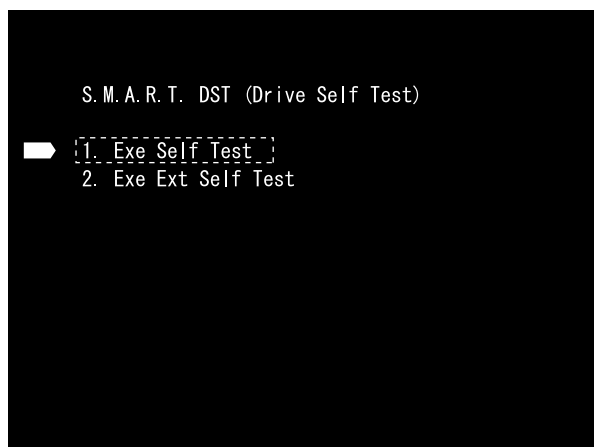
To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.

Press the "3" key on the remote control unit for servicing while the menu screen is displayed.

When the following screen is displayed, press the "1" key to start the Self-Test.

A



B

The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.

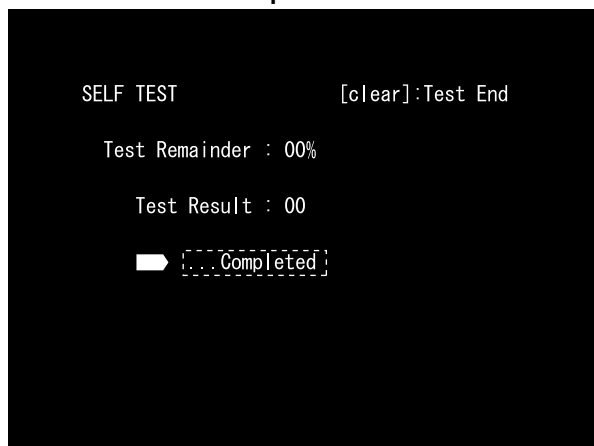
Check whether or not an error has occurred after the test is finished.

Diagnosis results

- Without an error: "... Completed" is displayed. Then, proceed to the Extended Self-Test.
- With an error: "... Error" is displayed. Look at the number in Test Result. If the place value for tens is 1 or 2, execute the Self-Test again. If it is from 3 to 7, the HDD must be replaced.

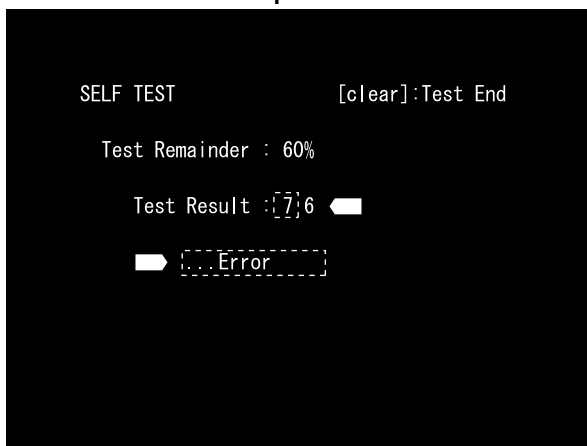
Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error



D

Example: With an error

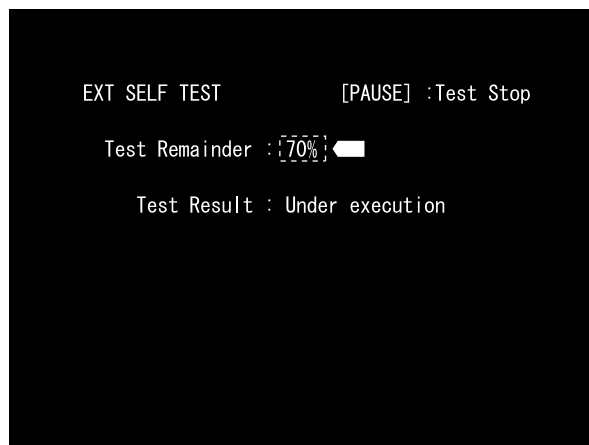
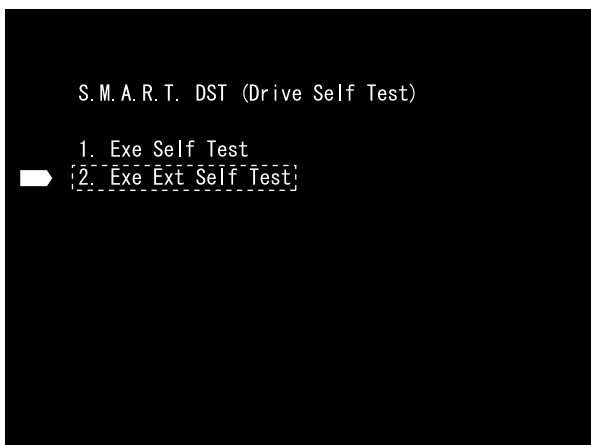


E

To return to the menu screen, press the "Clear" key.

F

④ Execute the Ext (Extended) Self-Test.



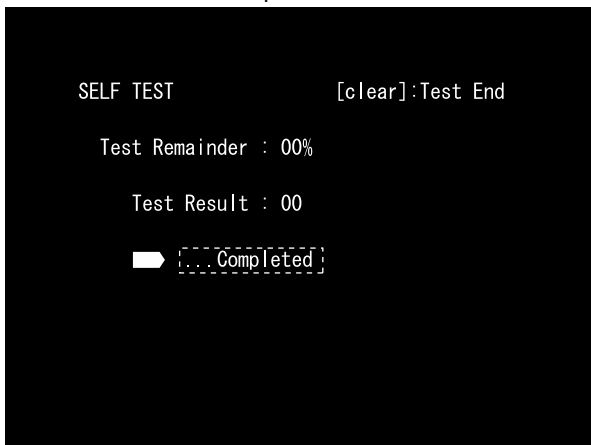
Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

Diagnosis results

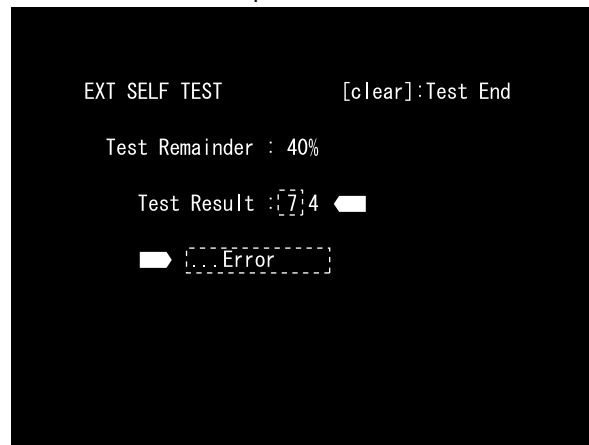
- Without an error: "... Completed" is displayed.
If no error occurs up until this stage, HDD operations are normal except for writing operations.
If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: "... Error" is displayed.
Look at the number in Test Result.
If the place value for tens is 1 or 2, execute the Ext Self-Test again.
If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error



Example: With an error



To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.

Before executing this test, **be sure to obtain your client's consent for erasure of HDD data.**

Press the "4" key while the menu screen is displayed then the "SKIP ►►" key to start the HDD R/W Check.

To stop executing the test (OFF) while it is in progress, press the "SKIP ◄◄" key.

HDD R/W CHECK OFF | ON

Caution! This test overwrites all sectors.

Write Error : 0

Read Error : 0

Compare Error : 0

Current LBA : 0

Max LBA : 160086528

Progress : 0 %

Remain Time : ---h --m --s

The display on the left indicates the progress of the test.

The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.

HDD R/W CHECK OFF | ON

Caution! This test overwrites all sectors.

Write Error : 0

Read Error : 0

Compare Error : 0

Current LBA : 17940484

Max LBA : 160086528

Progress : 11 %

Remain Time : 5h 59m 11s

Detailed description on each item on the screen

- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.

Estimated time: 6.4 hours/160 GB

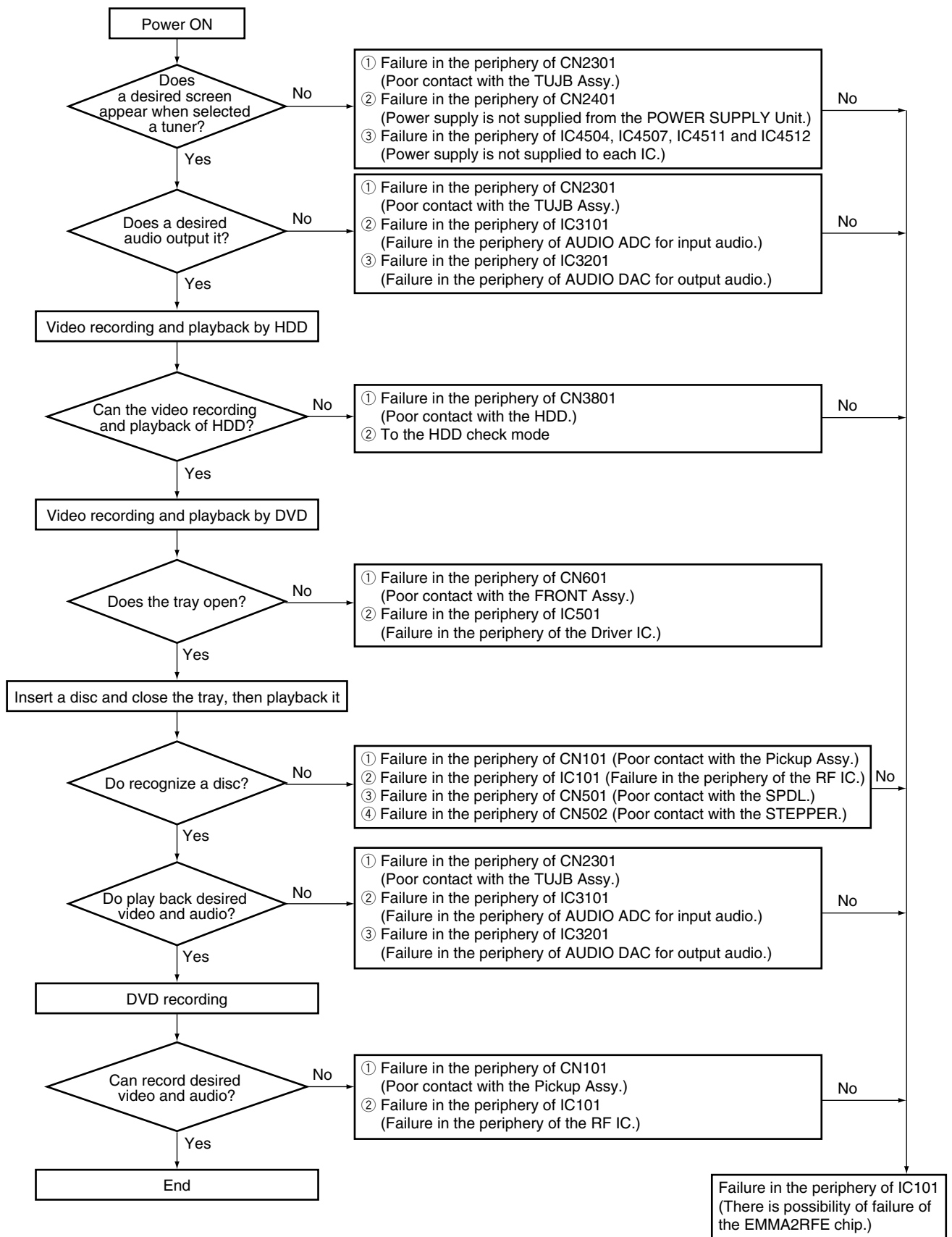
3.2 hours/80 GB

Diagnosis results

- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

7.1.8 DIAGNOSIS OF THE MAIN ASSY



7.1.9 NOTE ON REPLACEMENT OF THE SDRAM

Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM. If the SDRAM that needs replacement was manufactured by HYNIX, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

• How to identify the manufacturer

Confirm the name of the manufacturer stamped on the surface of the part.

By HYNIX (replacement of both SDRAMs required)



By SAMSUNG (replacement of only the defective SDRAM possible)



• Measures to be taken

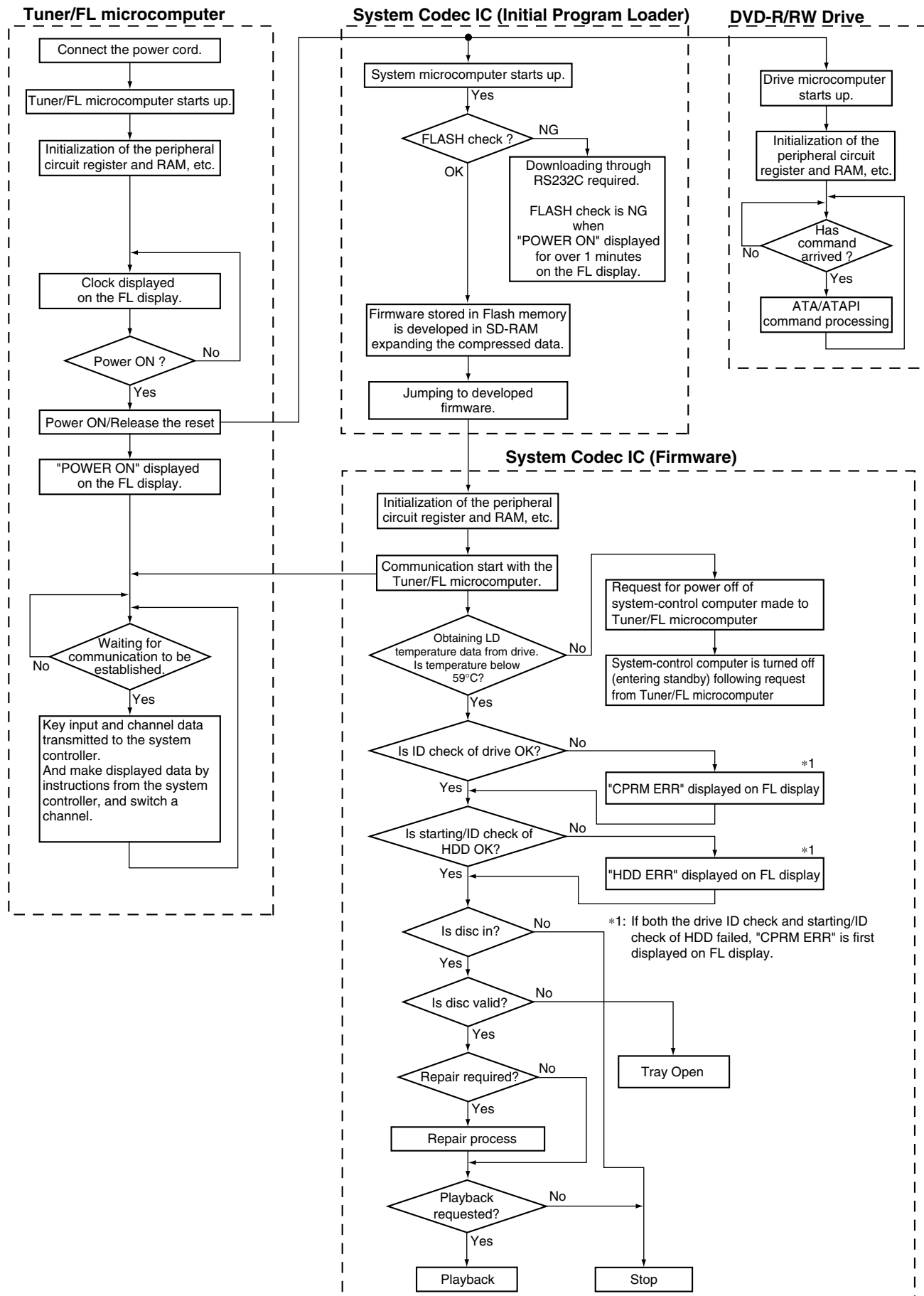
- ① If the SDRAM that needs replacement was manufactured by HYNIX:
Replace both IC1201 and IC1221 at the same time.
- ② If the SDRAM that needs replacement was manufactured by SAMSUNG:
Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

• Possible malfunctions

If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:

- ① The power does not come on.
- ② High-speed dubbing disabled
- ③ Other malfunctions related to the SDRAM

7.1.10 SETUP SEQUENCE



7.1.11 DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.

Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

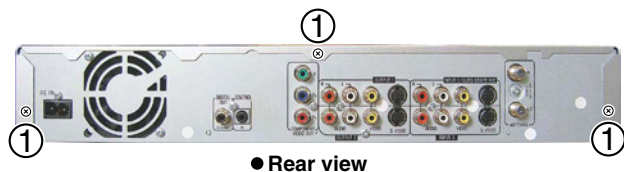
Note 3: For performing the diagnosis shown below, the following jigs for service is required:

- Emergency disc ejection rod (GGF1529)
- Flexible cable for service (VKP2291)

Diagnosis

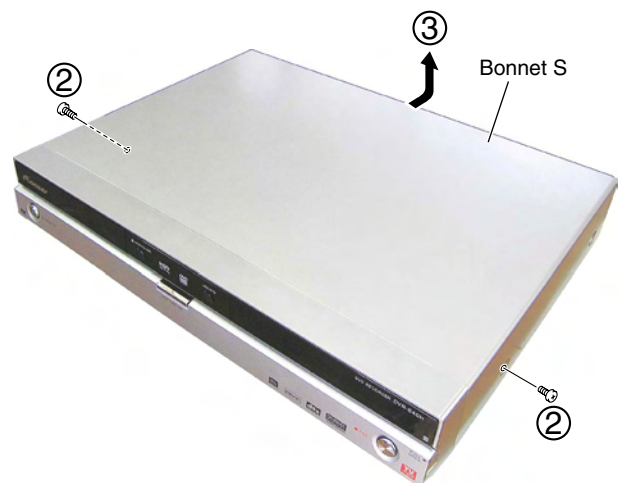
1 Bonnet S

- ① Remove the three screws.



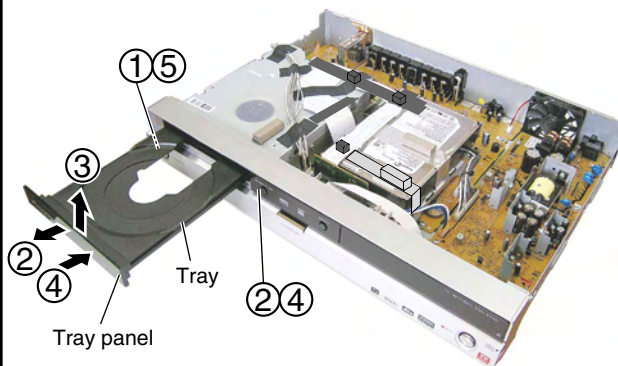
- ② Remove the two screws.

- ③ Remove the bonnet S.



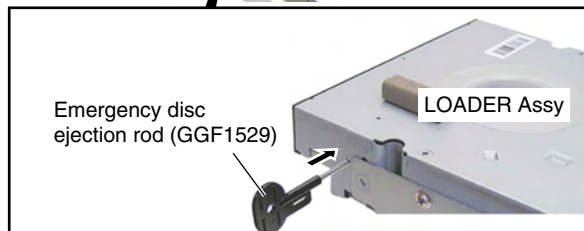
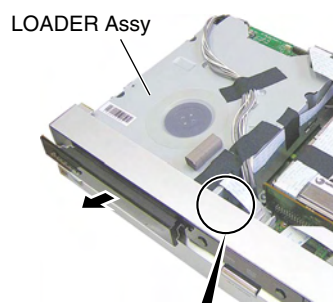
2 Tray Panel

- ① Press the STANDBY/ON button to turn on the power.
② Press the OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the OPEN/CLOSE button to close the tray.
⑤ Press the STANDBY/ON button to turn off the power.



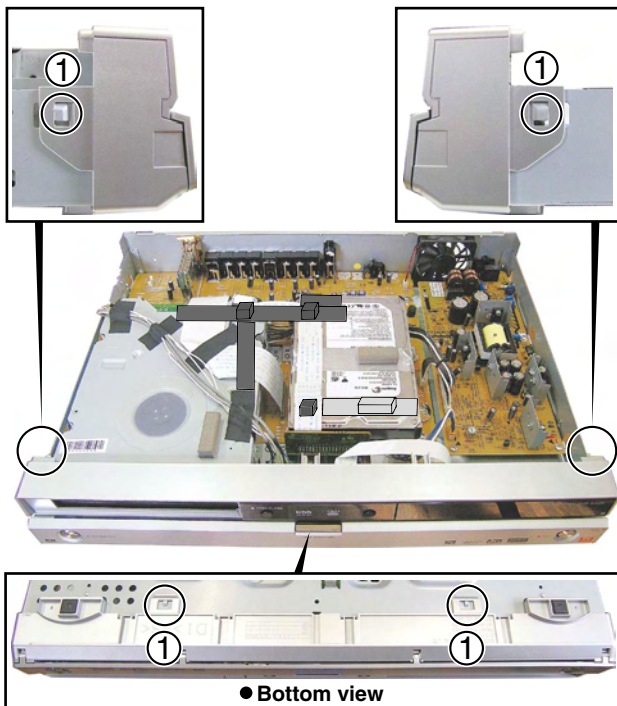
● How to open the tray when the power cannot be turned on

When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)

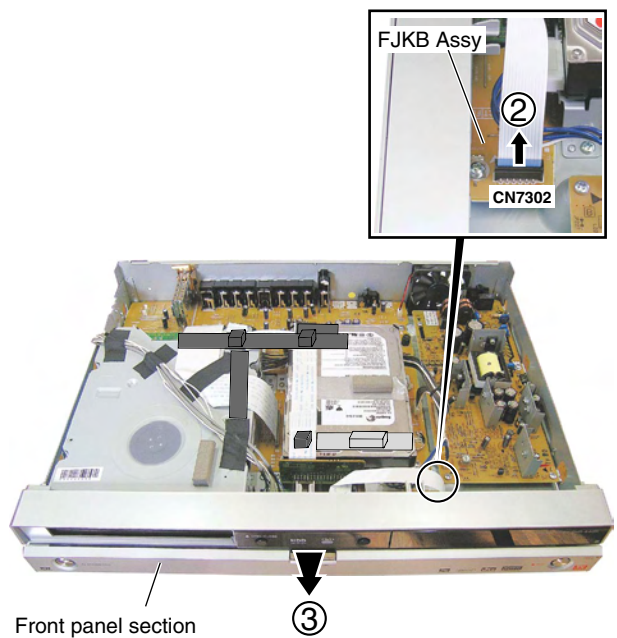


3 Front Panel Section

- ① Unhook the four hooks.



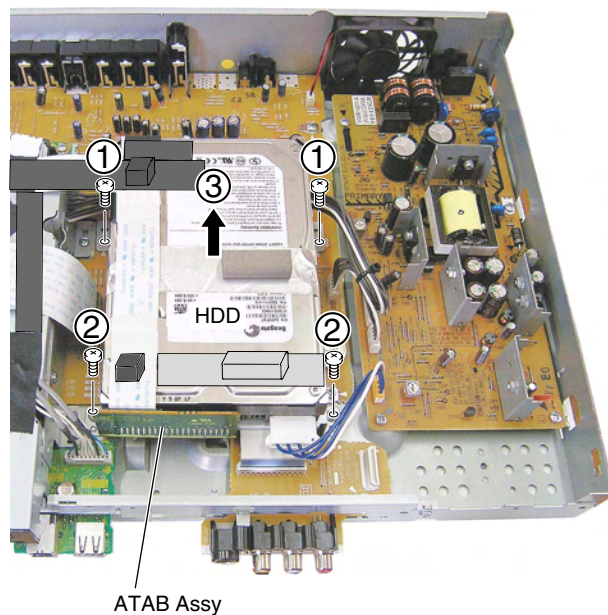
- ② Disconnect the one flexible cable.
③ Remove the front panel section.



4 HDD and LOADER Assy

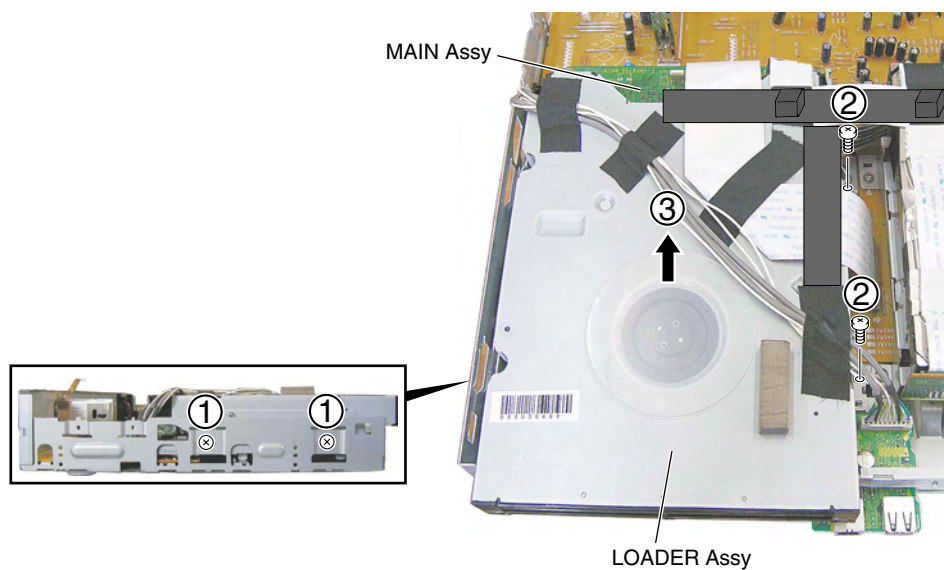
• HDD

- ① Remove the two screws.
② Remove the two screws.
③ Remove the HDD with the ATAB Assy and the HDD stay.
(Disconnect cables, as required.)



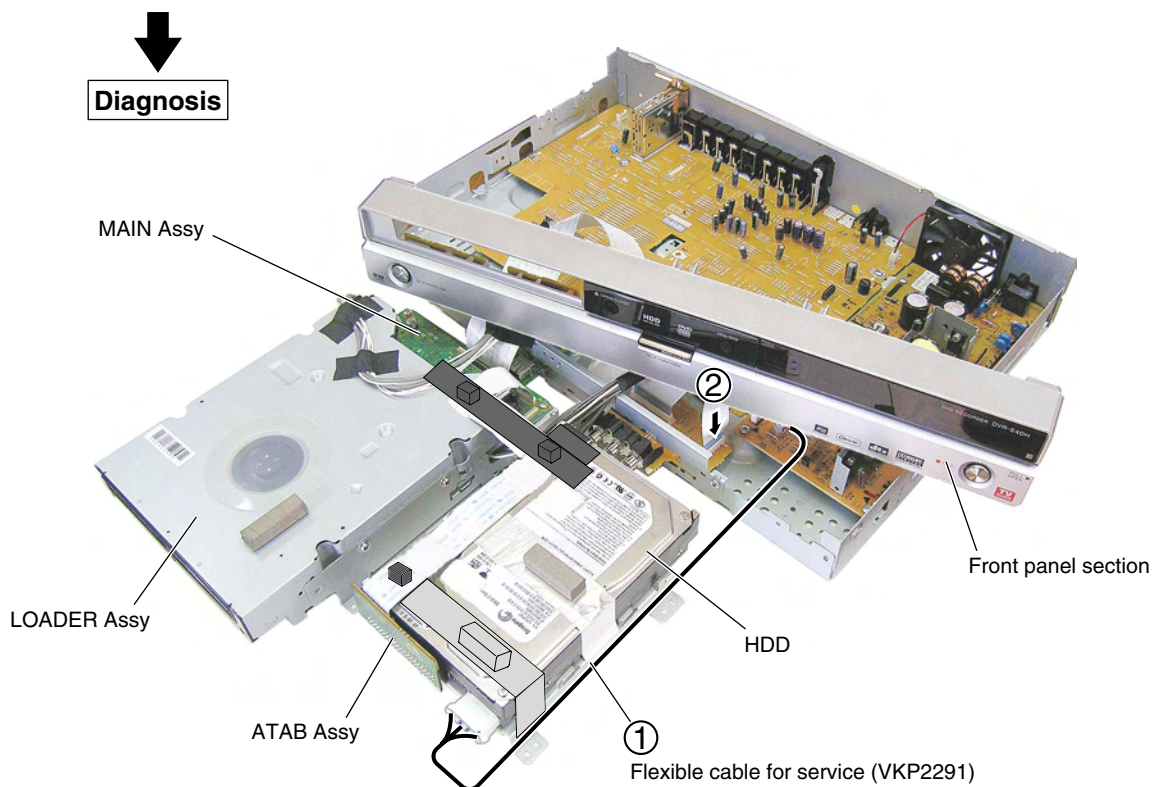
• LOADER Assy

- ① Remove the two screws.
- ② Remove the two screws.
- ③ Remove the LOADER Assy.
(Disconnect cables, as required.)



5 Diagnosis

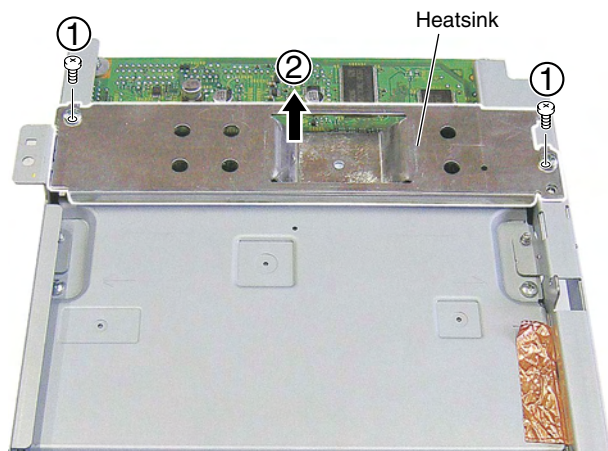
- ① Connect the flexible cable for service.
- ② Reassembling the front panel section.
- ③ Arrange the unit as shown in the photo below.



Access to the MAIN Assy, Cleaning the Pickup Lens

• Heatsink

- ① Remove the two screws.
- ② Remove the heatsink.

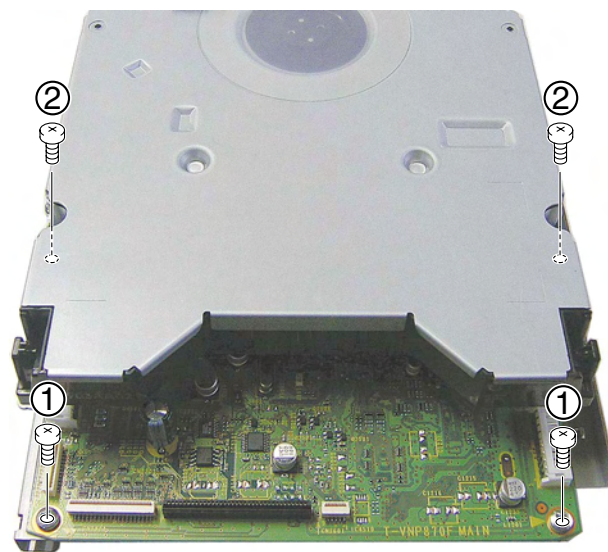


● Bottom view



• Writer Stay L and R

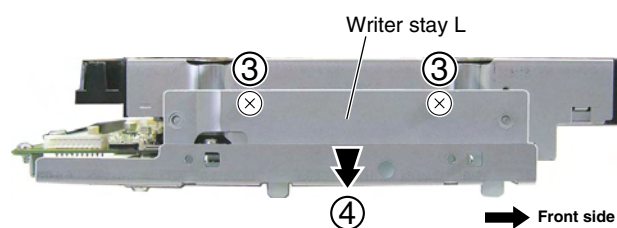
- ① Remove the two screws.
- ② Remove the two screws.



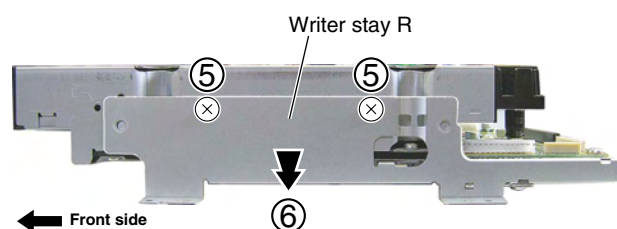
● Rear view



- ③ Remove the two screws.
- ④ Remove the writer stay L.

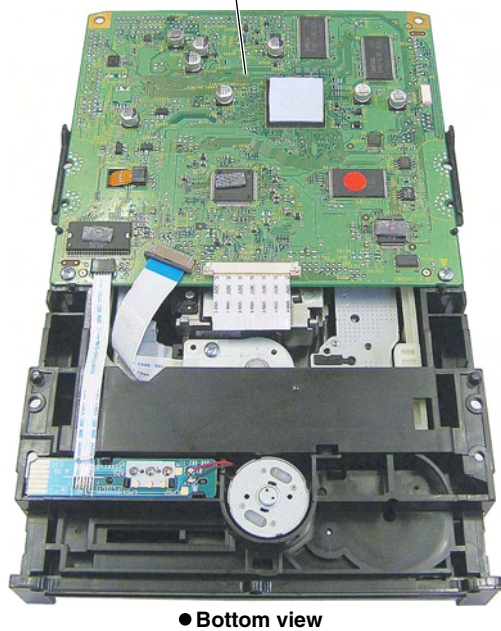
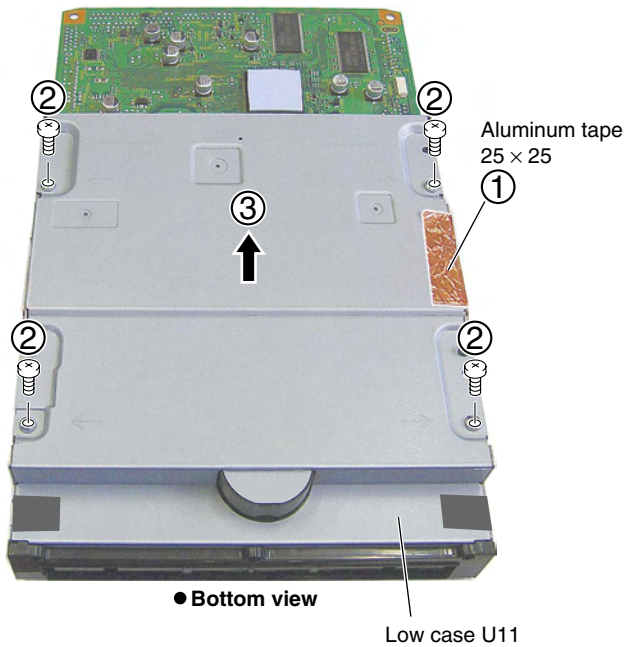


- ⑤ Remove the two screws.
- ⑥ Remove the writer stay R.



• Low Case U11 and UP Case S

- ① Remove the aluminum tape 25 × 25.
- ② Remove the four screws.
- ③ Remove the low case U11.



• Bottom view

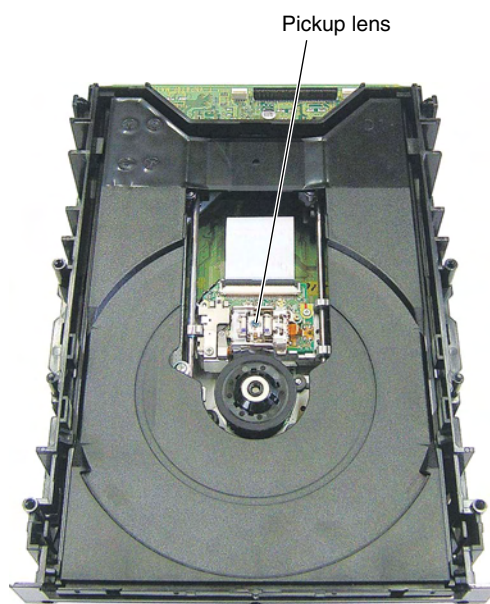


- ④ Remove the UP case S.



Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



7.2 IC

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

• List of IC

PMC007A8, UPD61272F1-107KA3A, PCA9557PW, TD0TG242-0F0C8

■ PMC007A8 (TUJB ASSY : IC101)

- TUNER Microcomputer

• Pin Function

No.	Mark	Pin Name	I/O	Pin Function
1	PA3/SO8	FLDATA	O	Communication line with FL driver From tuner controller to FL driver
2	PA4/SI8/SB8	FLSTB	O	Communication strobe signal with FL driver
3	PA5/SCK8	FLCLK	O	Communication clock with FL driver
4	P70/INT0/T0LCP	WDT	I	WDT for microcomputer runaway detection RC is external connection. H: Forced reset
5	P71/INT1/T0HCP	ACDET	I	Existence detection of AC power Level interrupt
6	P72/INT2/T0IN/T0LCP	HS_MTOT	I	System controller communication handshake From system controller to Tuner controller
7	P73/INT3/T0IN/T0HCP	IR	I	Pulse input of the remote control unit
8	RES#	XTRESET	I	Reset input
9	XT1	XT1	I	Sub clock connection 32.768kHz
10	XT2	XT2	O	Sub clock connection
11	VSS1	GND	–	Ground
12	CF1	CF1	I	Main clock connection 15MHz
13	CF2	CF2	O	Main clock connection
14	VDD1	VDD1	–	Power supply
15	P80/AN0	MODEL1	AI	Input 1 for destination judgment
16	P81/AN1	MODEL2	AI	Input 2 for destination judgment
17	P82/AN2	KEY1	AI	Main unit key input 1
18	P83/AN3	KEY2	AI	Main unit key input 2
19	P84/AN4	KEY3	AI	Main unit key input 3
20	P85/AN5	AGC	AI	AGC voltage input from the tuner For simple check
21	P86/AN6	BATTERY	AI	Input for battery voltage check Can measure only during 5V operation
22	P87/AN7	FUNC	AI	SCART Function signal input
23	P10/SO0	SDET3	I	Plug detection of S terminal 3
24	P11/SI0/SB0	SDET2	I	Plug detection of S terminal 2
25	P12/SCK0	SDET1	I	Plug detection of S terminal 1
26	P13/SO1	AVLOUT	O	NexTVViewLink output signal Negative logic Reverse on the SCART terminal
27	P14/SI1/SB1	SDA	O/D	IIC communication (data)
28	P15/SCK1	SCL	O/D	IIC communication (clock)
29	P16/T1PWML	XSYSRST	O	IC reset signal of whole system
30	P17/T1PWMH/BUZ	TUDET	I	The old and the new distinction of the tuner pack L: New tuner, H: Old tuner
31	PE0/AN12	MUTEV	O	CVBS for video driver IC and Y/C mute signal L: Mute, H: Release Fix to L because mute does not control.
32	PE1/AN13	IRB_EN	I	IR blaster function valid selection Open: IR blaster invalidity, GND: IR blaster is valid
33	PE2/AN14	AMUTE2	O	Audio mute signal of output stage Negative logic H: Release, L: Mute
34	PE3/AN15	SELV1	O	Input switch of video selector INSEL 1 of LA73031
35	PE4	SELV2	O	Input switch of video selector INSEL 2 of LA73031
36	PE5	SELV3	O	Input switch of video selector INSEL 3 of LA73031
37	PE6	YVSEL	O	CVBS or Y/C switch of video selector YOUT-SEL of LA73031
38	PE7	SWSTBY	O	Standby mode switch of video selector Fix to L output because the standby mode is not used.
39	VSS4	GND	–	Ground
40	VDD4	VDD4	–	Power supply

No.	Mark	Pin Name	I/O	Pin Function
41	PF0	LET/FUNC_ON	O	Letter-box output superimposed signal Function output signal for Europe model
42	PF1	SQU	O	Squeeze output superimposed signal
43	PF2	CONDET	I	Electric discharge detection of capacitor for power supply backup Readout after cold-start immediately. If it was L, reduce the voltage.
44	PF3	S1	O	S1/S2 switching signal
45	PF4/IRP	IROUT	O	Pulse output for IR blaster
46	PF5	P_SAVE2	O	Power save mode switch of HA118326
47	PF6	PSMUTE	O	Audio mute control of SCART
48	PF7	XAVLTH	O	Through switch of AV.Link communication line
49	SI2P0/SO2	SO2	O	SIO2 transmission Not used.
50	SI2P1/SI2/SB2	SI2	O	SIO2 reception Not used.
51	SI2P2/SCK2	SCK2	O	SIO2 communication clock Not used.
52	SI2P3/SCK20	RFTHRU	O	RF through switch of the tuner Control with the main unit setting during standby.
53	PWM1	NC	O	Non connection
54	PWM0	FANCTRL	O	Radiation of heat fan rotating speed control H: Top speed, L: Stop Intermediate speed realizes by PWM
55	VDD2	VDD2	–	Power supply
56	VSS2	GND	–	Ground
57	P00	P_CONT2	O	Power supply control of the main board For controlling 2.5V and 3.3V
58	P01	MUTECTL	O	Mute invalidity control Port to suppress last stage mute
59	P02	EPGEXT	O	Equalizer switch of slicer input video
60	P03	TUON	O	Power supply control of the tuner section There is a case to turn on the power during standby independently.
61	P04	SWVION	O	Power supply control of Japan/North America video system Non connection in Europe and General
62	P05/CKO	P_CONT	O	Power supply control of the whole system
63	P06/T6O	FLPON	O	Power supply control of the FL tube
64	P07/T7O	XP_SAVE	O	Power supply control of Europe video system Set to SWVION on the source.
65	P20/INT4/T1IN/T0LCP/T0HCP/INT6/T0LCP1/SSGI0	STATCHG	I	Multiplex status change detection of MSP D_CTR_I/O_1 of MSP
66	P21/INT4/T1IN/T0LCP/T0HCP	J_CLOCK	I	Input audio for Just Clock Pulse input of the tuner audio
67	P22/INT4/T1IN/T0LCP/T0HCP/HCTR	CSYNCIN	I	C-Sync for Auto-Rec
68	P23/INT4/T1IN/T0LCP/T0HCP	XCHECKER	I	Unit checker mounting distinction
69	P24/INT5/T1IN/T0LCP/T0HCP/INT7/T0HCP1/SSGI1	MRST	I	Main board power failure detection Edge interrupt
70	P25/INT5/T1IN/T0LCP/T0HCP	AVLIN	I	NexTViewLink input line
71	P26/INT5/T1IN/T0LCP/T0HCP	X525P	I	525P output signal from the system controller Not used.
72	P27/INT5/T1IN/T0LCP/T0HCP	BLANKIN	I	BLANK signal input of the SCART
73	P30/PWM4	NC	O	Non connection
74	P31/PWM5	TU_DCCON	O	DC/DC converter For +32V generation 200kHz, 2(H): PWM output of 1 (L)
75	P32/UTX1	TXD1	O	Transmission for RS-232C terminal
76	P33/URX1	RXD1	I	Reception for RS-232C terminal
77	P34/UTX2	TXD2	O	UART2 transmission Not used.
78	P35/URX2	RXD2	O	UART2 reception Not used.
79	P36	HS_TTOM	O	System controller communication handshake From tuner controller to system controller
80	VDDODA	VDDODA	–	Power supply

No.	Mark	Pin Name	I/O	Pin Function
81	PB6/CVD/CSYNC	CVBSIN	I	Input video for data slicer 1.0Vpp
82	VSSVCO	GND	–	Ground
83	PB4/FILTSLC	FILTSLC	I	External filter for slicer PLL
84	VDDVCO	VDDVCO	–	Power supply
85	PB2	NC	O	Non connection
86	PB1	NC	O	Non connection
87	PB0/DS1FLD	NC	O	Non connection
88	VSS3	GND	–	Ground
89	VDD3	VDD3	–	Power supply
90	PC7/DBGP2	DBGP2	O/D	Control port for on-chip debugger
91	PC6/DBGP1	DBGP1	O/D	Control port for on-chip debugger
92	PC5/DBGP0	DBGP0	O/D	Control port for on-chip debugger
93	PC4/AN11	C/N	AI	C/N detection of BS-IF
94	PC3/AN10	BS15IN	I	Antenna power supply detection of the BS-OUT terminal There is power supply with L. There is no power supply with H
95	PC2/AN9	BS15SRT	I	Antenna power supply short-circuit detection of the BS-IN terminal L: Short-circuit, H: Normal
96	PC1/AN8	BS15ON	O	Antenna power supply control to the BS-IN terminal L: Power OFF, H: Power ON
97	PC0/OCSYNC	P_SAVEBS	O	BS RF through control L: Not through, H: Through
98	PA0/SO7	SD_TTOM	O	System controller communication data line From tuner controller to system controller
99	PA1/SI7/SB7	SD_MTOT	I	System controller communication data line From system controller to tuner controller
100	PA2/SCK7	SCK_MTOT	I	System controller communication clock From system controller to tuner controller

- DVDR IC

F

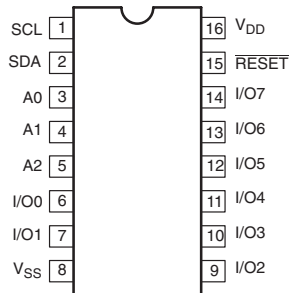
112



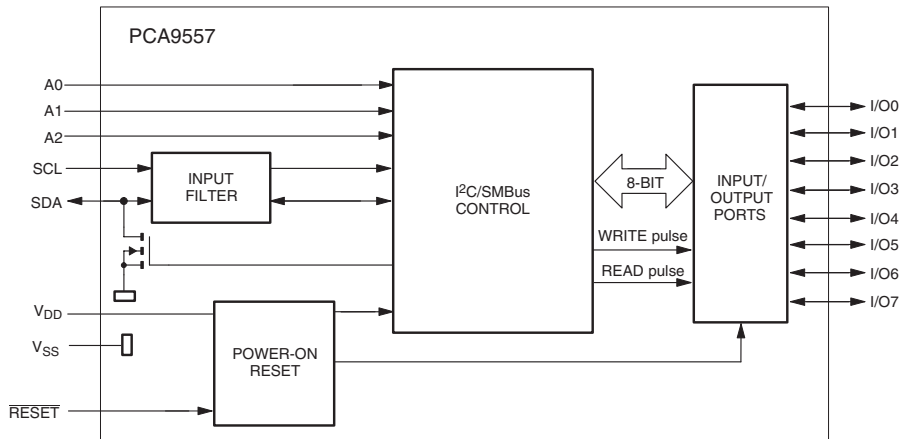
PCA9557PW (MAIN ASSY : IC3802)

• 8Bit IIC to PARA IC

● PIN LAYOUT



● BLOCK DIAGRAM



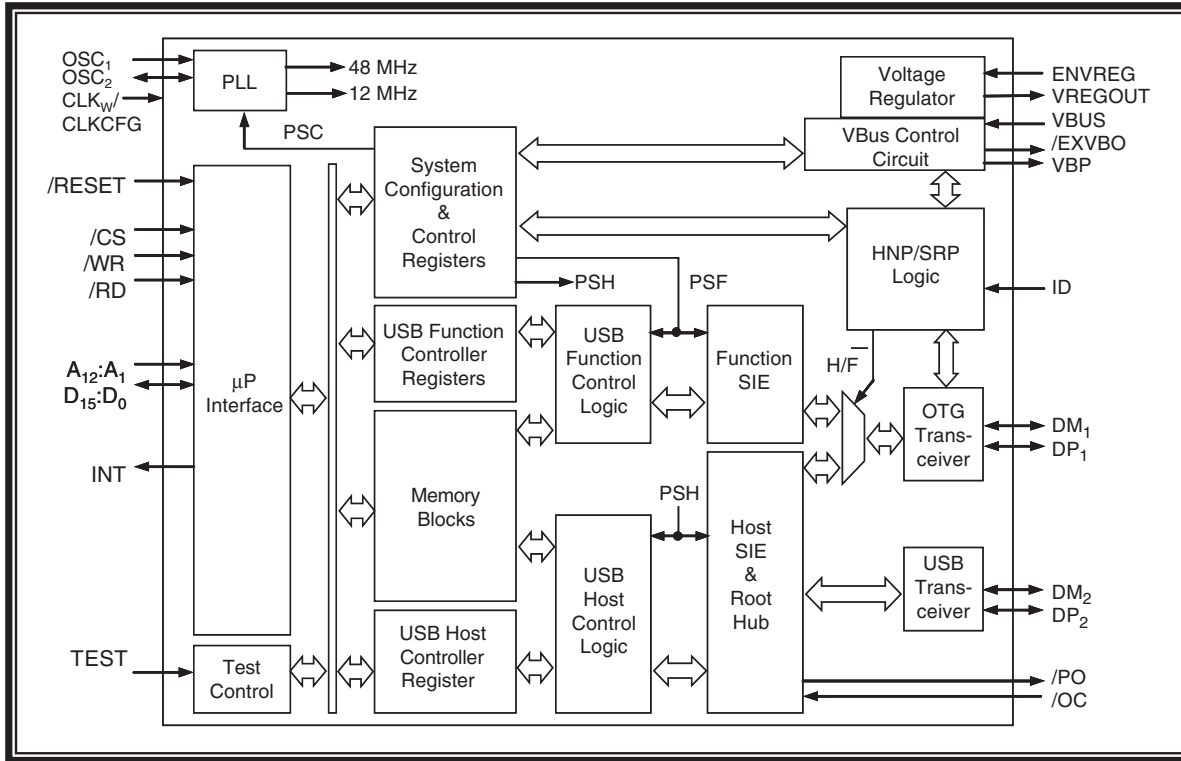
● PIN FUNCTION

Pin No.	Name	Function
1	SCL	Serial clock line
2	SDA	Serial data line
3	A0	Address input 0
4	A1	Address input 1
5	A2	Address input 2
6	I/O0	I/O0 (open drain)
7	I/O1	I/O1
8	VSS	Supply ground
9±14	I/O2±I/O7	I/O2 to I/O7
15	RESET	Active-LOW reset input
16	VDD	Supply voltage

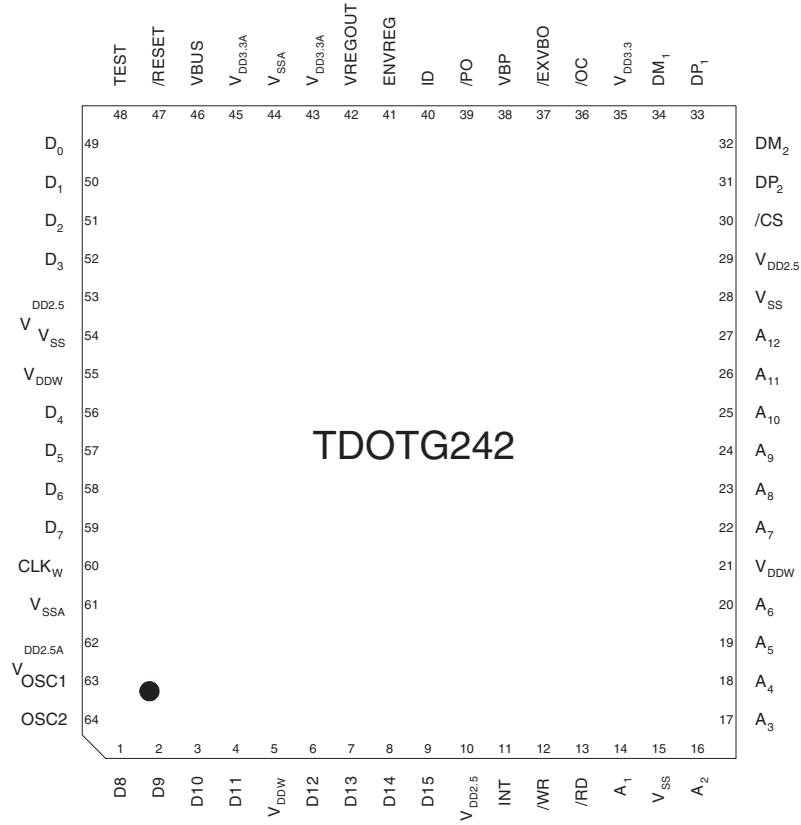
TDOTG242-0F0C8 (MAIN ASSY : IC5701)

- USB Controller IC

● BLOCK DIAGRAM



● PIN LAYOUT



● PIN NAME

1	D ₈	17	A ₃	33	DP ₁	49	D ₀
2	D ₉	18	A ₄	34	DM ₁	50	D ₁
3	D ₁₀	19	A ₅	35	V _{DD3.3}	51	D ₂
4	D ₁₁	20	A ₆	36	/OC	52	D ₃
5	V _{DDW}	21	V _{DDW}	37	/EXVBO	53	V _{DD2.5}
6	D ₁₂	22	A ₇	38	VBP	54	V _{SS}
7	D ₁₃	23	A ₈	39	/PO	55	V _{DDW}
8	D ₁₄	24	A ₉	40	ID	56	D ₄
9	D ₁₅	25	A ₁₀	41	ENVREG	57	D ₅
10	V _{DD2.5}	26	A ₁₁	42	VREGOUT	58	D ₆
11	INT	27	A ₁₂	43	V _{DD3.3A}	59	D ₇
12	/WR	28	V _{SS}	44	V _{SSA}	60	CLK _W
13	/RD	29	V _{DD2.5}	45	V _{DD3.3A}	61	V _{SSA}
14	A ₁	30	/CS	46	VBUS	62	V _{DD2.5A}
15	V _{SS}	31	DP ₂	47	/RESET	63	OSC ₁
16	A ₂	32	DM ₂	48	TEST	64	OSC ₂

OTG242LP pin assignment for the 64-pin LQFP

● PIN FUNCTION

A

B

C

D

E

F

Pin/Signal Name	Signal Type	Active Level	Pin/Signal Description
OSC ₁	I		Terminal for OSC.
OSC ₂	IO		
/RESET	I	L	Hardware reset.
/CS	I	L	Chip select.
/WR	I	L	Write strobe.
/RD	I	L	Read strobe.
A ₁₂ :A ₁	I		Address bus for an addressing space of 8K bytes.
D ₁₅ :D ₀	IO		16-bit data bus.
TEST	I	H	Factory test mode.
/EXVBO	O	L	Turn on/off the external V _{BUS} (5V) for OTG operation (1: V _{BUS} off; 0: V _{BUS} on).
/PO	O	L	Turn on/off the gang power for all Host ports.
/OC	I	L	Over current condition indicator for gang powered Host ports.
INT ¹	O/WO	PL	Interrupt to the MCU.
ID	I		Connected to the ID pin of the mini-AB connector (Port 1) for OTG applications.
DM ₁ , DP ₁	IO		Data lines for Port 1, which may serve as a USB Host, or OTG port.

Pin/Signal Name	Signal Type	Active Level	Pin/Signal Description
DM ₂ , DP ₂	IO		Data lines for Port 2, a dedicated USB Host port.
VBUS	I		V _{BUS} input sampled during HNP/SRP operations by the OTG port.
VBP	IO	H	V _{BUS} pulsing control. This pin is used only when Port 1 is an OTG port for a B-DEVICE.
CLK _W	I		This pin is available only in the QFP package
CLKCFG	I		This pin is available only in the BGA package
ENVREG	I		Enables the internal Voltage Regulator if asserted.
VREGOUT	PW		Internal Voltage Regulator output of 2.5V
V _{DD3.3A}	PW		Analog +3.3V
V _{DD2.5A}	PW		Analog +2.5V
V _{SSA}	PW		Analog ground.
V _{DD2.5}	PW		Digital +2.5V
V _{DDW}	PW		Wide-range IO +3.3V or +2.5V.
V _{SS}	PW		Digital/Wide-range IO ground.
NC	PS		No connection. These pins should be left floating.

1234

7.3 CAUTIONS ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During nonoperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 15°C/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance	Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm		387	217	200	26
1.0 inch / 25.4 mm		595	457	310	37
2.0 inch / 50.8 mm		1133	600	680	70
4.0 inch / 101.6 mm		1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.
- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
- If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
 - Handle the HDD over an antistatic pad that can also absorb shock.
 - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.
2. The following must be observed when handling the HDD:
 - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
 - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
 - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
 - Do NOT bump the HDDs against one another.
 - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
 - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

Model Name	Capacity	Western Digital		SEAGATE	
		Pioneer's Part No. (for service)	Manufacturer's Part No.	Pioneer's Part No. (for service)	Manufacturer's Part No.
DVR-540H-S DVR-543H-S	80GB	VXF1066	WD800BB -xxHJKC	VXF1084 VXF1108	ST380012ACE ST3802110ACE
DVR-640H-S	160GB	VXF1068	WD1600BB -xxGUCx	VXF1086 VXF1110	ST3160022ACE ST3160212ACE

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

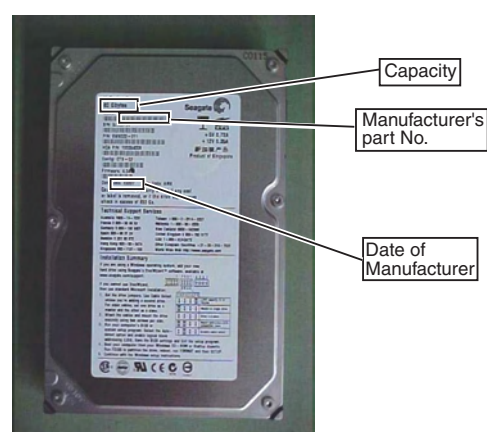
Western Digital(80GB)



Western Digital(160GB)



Seagate(80G,160G)



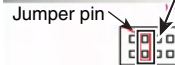
■ Confirmation of the jumper pin location of the HDD

Western Digital



Setting : Cable Select(CS)

Seagate



Setting : Cable Select(CS)

7.4 DISC/CONTENT FORMAT

	HDD	DVD-R	DVD-RW	DVD+R	DVD+RW	DVD-RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video) *1	DVD (Video) *2	DVD+R *3	DVD+RW *13, 16
Logos						
Re-recordable / Erasable	●	●*3	●*3	●	●*3	●*14
Editing of recorded programs	●	●	●*4	●	●*4	●
Recording of Copy-once protected material	●	●*12	●*12			●*12
Playback in other players/recorders	n/a	*5	●*6	●*6	●*6, 15	●*8
Chase play	●					
16:9 and 4:3 program recording	●	●	●			●
Bilingual broadcast recording of both audio channels	● *10, 11	●*11	●*11			●*11

Notes to table

- *1 Must be initialized for VR mode recording
 *2 Must be initialized for Video mode recording
 *3 Erasable, but free space does not increase
 *4 Cannot erase sections, edit chapters or use playlist editing
 *5 Must be compatible with DVD-R(VR) playback
 *6 Finalize using this recorder (may not playback in some units)
 *7 Must be compatible with DVD-RW(VR) playback
 *8 Must be compatible with DVD+RW playback
 *9 Must be compatible with DVD-RAM playback
 *10 Only when HDD Recording Format is set to Video Mode Off
 *11 Only when the recording mode is not set to LPCM

- *12 CPRM-compatible discs only
 *13 Take the disc out of the cartridge before use. Only Matsushita and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.
 *14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.
 *15 Must be compatible with DVD+R playback
 *16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about 1 hour.
DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (dual-layer) and DVD+R DL (double-layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- Please read the information provided on the disc packaging carefully before purchasing DVD-R DL/DVD+R DL discs:
- Confirm the disc version:** Use ver. 3.0 / 2 x to 4 x DVD-R discs.
- Confirm the recording speed:** DVD-R should be compatible with 2 x or 4 x recording; DVD+R with 2.4 x to 8 x recording.

- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:



- Correct operation has been confirmed for DVD-R DL discs (Ver. 3.0 / 2 x, 4 x) produced by the following manufacturers: Mitsubishi Kagaku Media, Verbatim (as of March 2005).

About DualDisc playback

A DualDisc is a new two-sided disc, one side of which contains DVD content -video, audio, etc. -while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play. For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format - see below for further compatibility information.



CD-R/RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files.
* ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.
- Multi-session playback: Yes (except CD-Audio and Video CD/Super VCD)
- Unfinalized disc playback: CD-Audio only

Compressed audio compatibility

- Compatible media: CD-ROM, CD-R, CD-RW
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 Kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 (files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)
- DRM (Digital Rights Management)¹ file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files - do not use for other file types)

Note

¹ DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other than the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC (or other WMA recording equipment) and/or software.

- File structure: Up to 99 folders / 999 files (if these limits are exceeded, only files and folders up to these limits are playable)

WMA (Windows Media Audio) compatibility



The Windows Media[®] logo printed on the box indicates that this recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media[®] Player for Windows[®] XP, Windows Media[®] Player 9 or Windows Media[®] Player 10 series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

DivX video compatibility



DivX is a compressed digital video format created by the DivX[®] video codec from DivX, Inc. This recorder can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles." When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX[®] Certified product.
- Plays all versions of DivX[®] video (including DivX[®] 6) with standard playback of DivX[®] media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). *Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.*
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

DivX[®] VOD content



In order to play DivX VOD (video on demand)

content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.



Important

- DivX VOD content is protected by a DRM (Digital Rights Management) system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
* File format used by digital still cameras
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files - do not use for other file types)
- File structure: The recorder can load up to 99 folders / 999 files at one time (if there are more files/folders than this on the disc then more can be reloaded)

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

Dolby Digital



Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

DTS

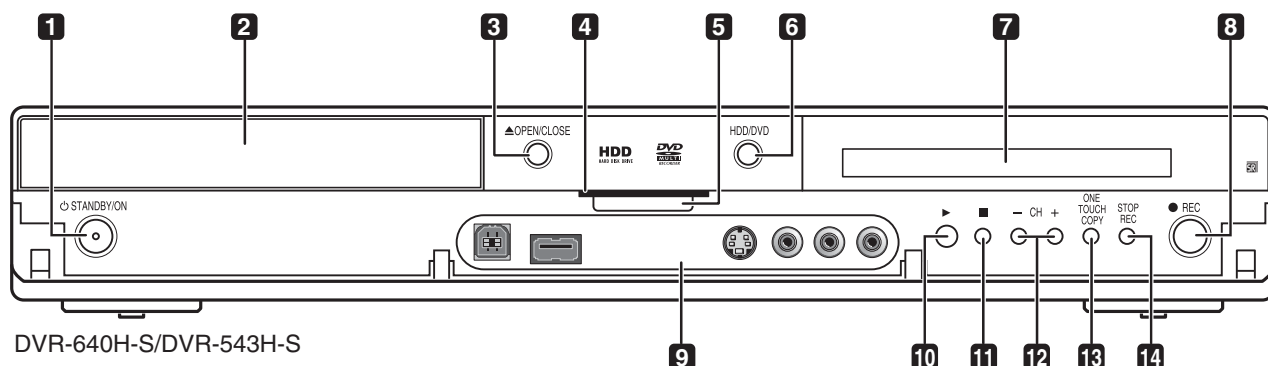


"DTS" and "DTS Digital Out" are registered trademarks of Digital Theater Systems, Inc.

8. PANEL FACILITIES

8.1 FRONT SECTION

● Front panel



1 STANDBY/ON

Press to switch the recorder on/into standby.

2 **Disc tray**

3 OPEN/CLOSE

Press to open/close the disc tray.

4 **HDD / DVD indicators**

Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

5 **HELP FUNCTION**

Press to display the on-screen help.

6 **HDD/DVD**

Press to switch between HDD and DVD for recording and playback.

7 **Front panel display and IR remote sensor**

8 REC

Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

9 **Front panel inputs**

10

Press to start or restart playback.

11

Press to stop playback.

12 **CH +/-**

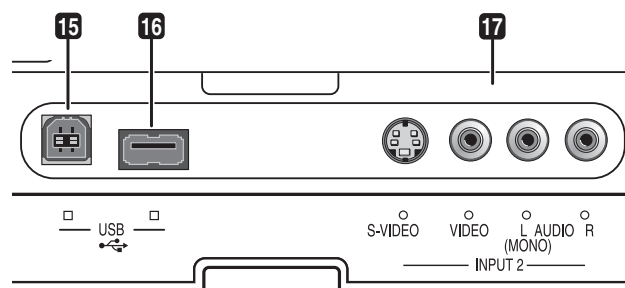
Use to change channels, skip chapters/tracks, etc.

13 **ONE TOUCH COPY**

Press to start One Touch Copy of the currently playing title to DVD or the HDD.

14 **STOP REC**

Press to stop recording.



On the front panel a flip-down cover hides more connections.

15 USB port (type B) (DVR-640H-S/DVR-543H-S only)
USB port for connecting a PictBridge-compatible printer.

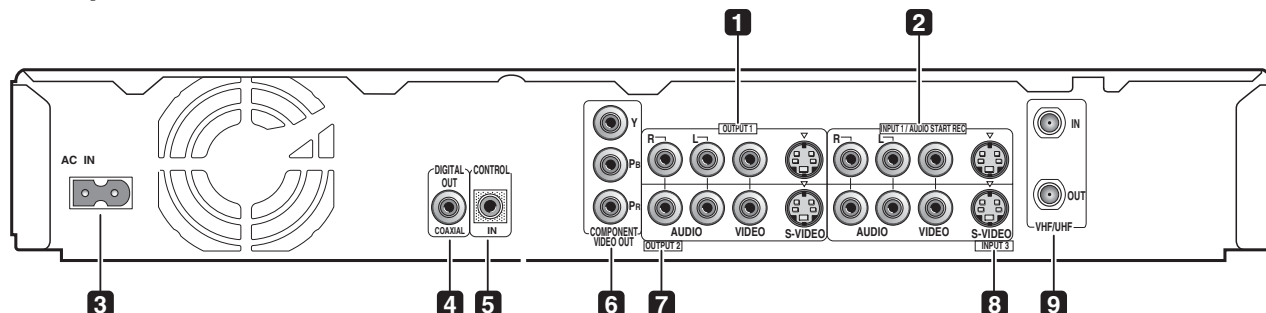
16 USB port (type A) (DVR-640H-S/DVR-543H-S only)
USB port for connecting a digital camera, USB memory or other USB device.

17 INPUT 2

Audio/video input (stereo analog audio; composite and S-video video), especially suitable for camcorders, game consoles, portable audio, etc.

8.2 REAR PANEL

● Rear panel



1 OUTPUT 1

Stereo analog audio, S-video and composite video output for connection to a TV, monitor, AV receiver, etc.

2 INPUT 1/AUTO START REC

Stereo analog audio, S-video and composite video input for connection to a satellite receiver, set top box, etc.

3 AC IN

Connect to a power outlet using the supplied power cable after making all other connections.

4 COAXIAL DIGITAL OUT

A digital audio output for connecting to an AV amp/receiver, Dolby Digital/DTS decoder or other equipment with coaxial digital input.

5 CONTROL IN

Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer  mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

6 COMPONENT VIDEO OUT

A high-quality video output for connecting to a TV or monitor with a component video input.

7 OUTPUT 2

Stereo analog audio, S-video and composite video output connection to a TV, monitor, AV receiver, etc.

8 INPUT 3

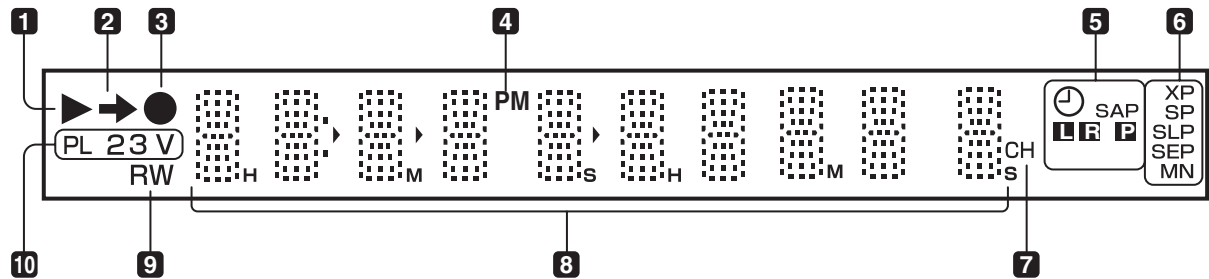
Stereo analog audio, S-video and composite video input connection to a satellite receiver, set top box, etc.

9 VHF/UHF IN/OUT

Connect your TV antenna to the **VHF/UHF IN (RF IN)** jack. The signal is passed through to the **VHF/UHF OUT** jack connection to your TV.

8.3 DISPLAY

● Display



1 ▶
Lights during playback; blinks when playback is paused.

2 ➡
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 PM
Lights to indicate PM (after midday) for the clock display.

5 ⏰
Lights when a timer recording has been set.
(Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

SAP
Lights when the currently selected TV channel has a Second Audio Program channel.

L R
Indicates which channels are recorded when dual mono is selected.

P
Lights when the component video output is set to progressive scan.

6 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP / SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP / SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

7 CH
Channel indicator for the built-in TV tuner.

8 Character display

9 R/RW
Lights when a recordable DVD-R or DVD-RW disc is loaded.

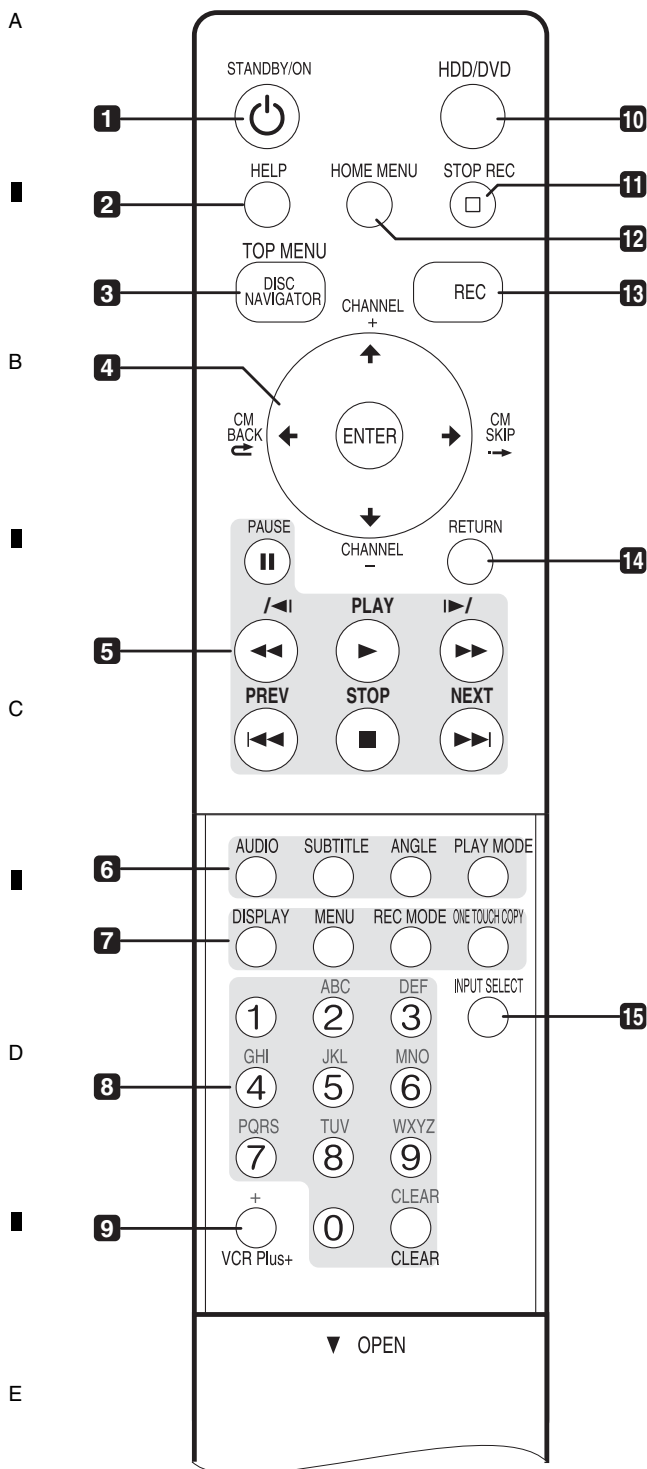
10 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

23
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

8.4 REMOTE CONTROL

● Remote control



1 **STANDBY/ON**

Press to switch the recorder on/into standby.

2 **HELP**

Press for help on how to use the current GUI screen.

3 **DISC NAVIGATOR / TOP MENU**

Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

4 **↑/↓/←/→ and ENTER**

Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

CM BACK (commercial back)

Press repeatedly to skip progressively backward through the audio or video playing.

CM SKIP (commercial skip)

Press repeatedly to skip progressively forward through the audio or video playing.

CHANNEL +/-

Press to change the channel of the built-in TV tuner.

5 **Playback controls**

II PAUSE

Press to pause playback or recording.

▶ PLAY

Press to start playback.

■ STOP

Press to stop playback.

◀◀ ▶▶

Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

◀◀ ▶▶

Press to start reverse or forward scanning. Press again to change the speed.

◀◀/▶▶ II/II▶▶

While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed. While paused, press to advance a single frame in either direction.

6 playback function buttons AUDIO Press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.) SUBTITLE Press to display/change the subtitles included in multilingual DVD-Video discs. ANGLE Press to switch camera angles on discs with multi-angle scenes. PLAY MODE Press to change the play mode (search, repeat, program play, etc.)	8 Number buttons, CLEAR Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on. Use CLEAR to clear an entry and start again. 9 VCR Plus+® Press then use the number buttons to enter a PlusCode® programming number for timer recording. 10 HDD/DVD Press to select the hard disk (HDD) or DVD for recording and playback. 11 ☐ STOP REC Press to stop recording. 12 HOME MENU Press to display the Home Menu, from which you can navigate all the functions of the recorder. 13 ☒ REC Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins. 14 RETURN Press to go back one level in the on-screen menu or display. 15 INPUT SELECT Press to change the input to use for recording.
7 DISPLAY Displays/changes the on-screen information displays. MENU Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW or finalized DVD+R/+RW disc is loaded. REC MODE Press repeatedly to change the recording mode (picture quality). ONE TOUCH COPY Press to start One Touch Copy of the currently playing title to DVD or the HDD.	

■ Jigs list

A

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	———— (*)	Diagnosis (ID data setting)
4P Power Cable	VKP2291	Extension of HDD
Jig for LD Power Adjustment	GGF1559	LD Power Adjustment
FFC Cable (10P)	GGD1477	LD Power Adjustment
CD-ROM Test Disc	GGV1054	LD Power Adjustment
DVD Dual Layer Test Disc	GGV1036	LD Power Adjustment

B

(*) Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

■ Lubricants and Glues list

Name	Lubricants and Glues No.	Remarks
Hanarl	GEM1041	refer to "2.3 FRONT PANEL SECTION"

C



Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

D

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

E

F